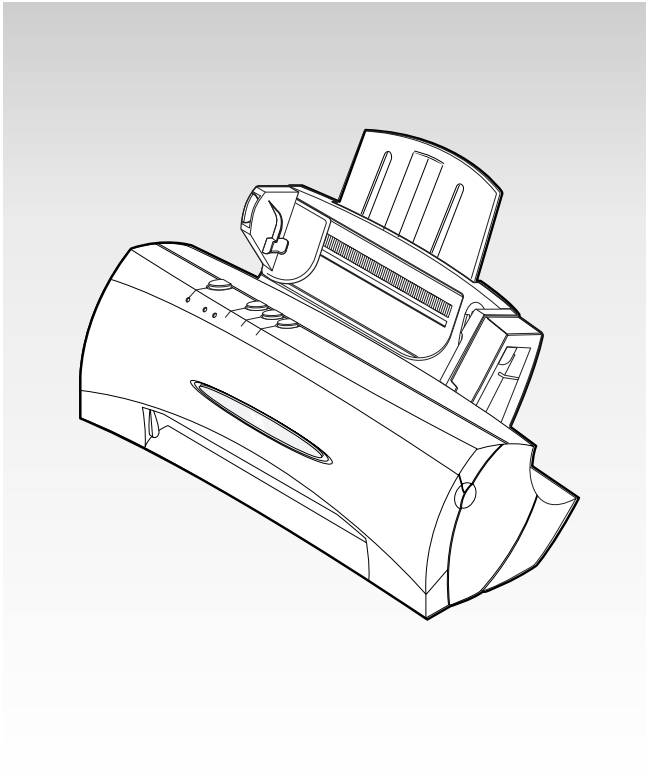
SAMSUNG

SF4300C

SERVICE Manual

INKJET PRINTER COMPOUND



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SAMSUNG
ELECTRONICS

1. Precautions

1-1 Safeguards

Please read these instructions carefully and completely.

1. Do not use this product in a humid place nor outdoor.
2. Do not place this product on an unstable stand or table. The product may fall, causing serious damage to the product.
3. Use this product in a well-ventilated place.
4. Slots are provided for ventilation. Never push objects of any kind into this product through these slots as they may result in a fire or electric shock. Never spill liquid of any kind on the product.
5. Power-supply cords should be routed so that they are not likely to be walked.
6. Use this product in a place big enough to support printers.
7. Install this product within 180cm from the computer and 150cm from the power outlet.
8. This product should be operated only from the type of power source indicated on the marking label.
9. If you use extension cords, be sure they have three-wire grounding-type power outlets. Do not overload wall outlets and extension cords. Never load one wall outlet with over 15 ampere.
10. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a dry cloth for cleaning.
11. Use only standard paper, OHP film, andapproved envelopes.

1-2 Servicing Precautions

Please read these instructions carefully and completely.

1. Unplug this product from the wall outlet before you disassemble it.
2. Replace defective parts with the same parts as them.
3. Check the insulation of electricity-conducting parts (metal plate or input terminal) that can easily contact AC plug blades.
4. How to check insulation: Pull the AC plug out of the outlet and measure insulation resistance of each blade.
5. Insulation resistance of AC plug blades against electricity-conducting parts should be 1 megaohm or over.
6. Always use it after connecting the ground of measuring instruments to the ground of chassis. And after you use it, separate the ground of the measuring instruments lastly.

1-3 Static Electricity Precautions

Semi-conductors are easily damaged by static electricity. They are usually called electrostatically sensitive devices (ESD). For example, there are IC, FET, and semi-conductor chips.

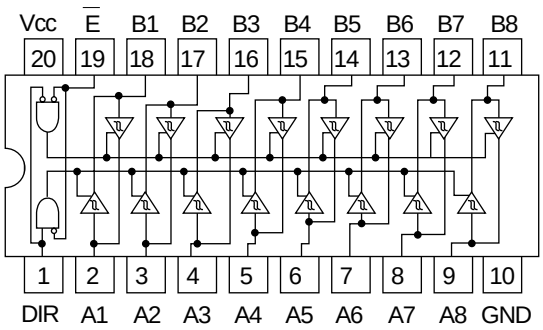
1) Before you handle semi-conductor parts, be sure to discharge electricity by touching earth connection or putting on a wristband. (Before you turn on the product, put off the wristband to prevent electric shock.)
2) Remove the static electricity protective device and then place the assembly on the surface of electric conductors such as aluminum foil to prevent static electricity from accumulating.
3) Do not use chemicals like Freon. These chemicals produce static electricity that may damage parts.
4) Solder ESD parts with a grounded soldering iron.
5) Use static electricity protective solder. Solder not marked 'static electricity protective' may accumulate static electricity that damages ESD parts.
6) Do not get rid of the static electricity protective cover of ESD parts until you are ready to replace them. Most of ESD parts are packed, with electricity conducting materials in contact with ESD parts leads.
7) Make static electricity protective materials contact the chassis or the circuit where parts will be mounted, before you remove the materials from ESD parts to be replaced.
8) Minimize your motion when you handle the ESD parts from which static electricity protective materials have been removed. Static electricity is generated when your clothes are frictionized or you walk on the carpet.
9) Be careful not to bend pins when you handle IC.
10) Pay attention to directions when you mount parts on PCB.
11) Overheat during soldering may damage the parts completely. Heat affects all the parts.

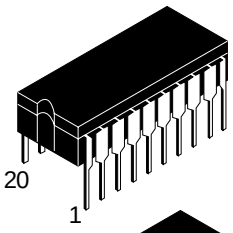
2. Referential Information

2-1 Abbreviations & Acronyms

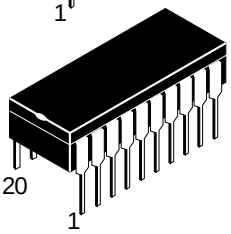
Abbreviations	Definition
MFP	Multi Function Peripheral
I/F	INTERFACE
UART	Universal Asynchronous Receiver/Transmitter
ECP	Expended Capasilities port : 8bits Data
CR	Carriage Return
LF	LINE FEED
CIP	COLOR IMAGE PROCESSOR
CCD	Charge Coupled Device
A/D	ANALOG TO DIGITAL
D/A	DIGITAL TO ANALOG
LIU	Line Interface Unit
TIT	Transformer Input from Transformer
ROT	Receive Output Transformer
LI	Line Input

LOGIC AND CONNECTION DIAGRAMS DIP (TOP VIEW)

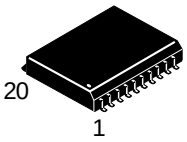




J SUFFIX
CERAMIC
CASE 732-03

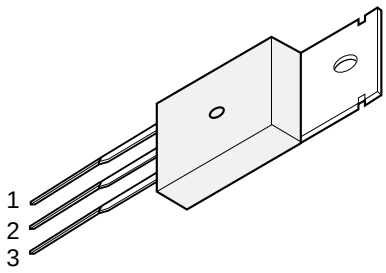


N SUFFIX
PLASTIC
CASE 738-03

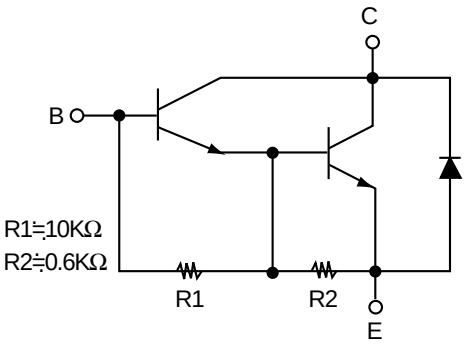


DW SUFFIX
SOIC
CASE 751D-03

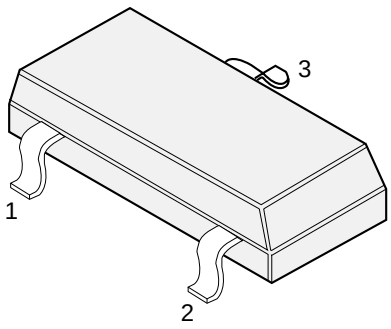
TO-220



1. Gate 2. Drain 3. Source

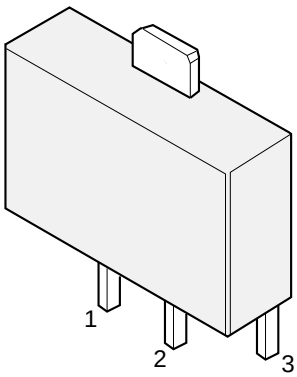


SOT-23



1. Base 2. Emitter 3. Collector

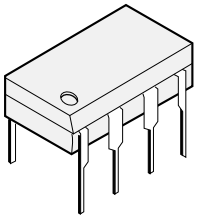
SOT-89



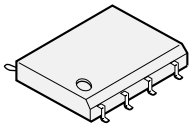
1. Base 2. Collector 3. Emitter

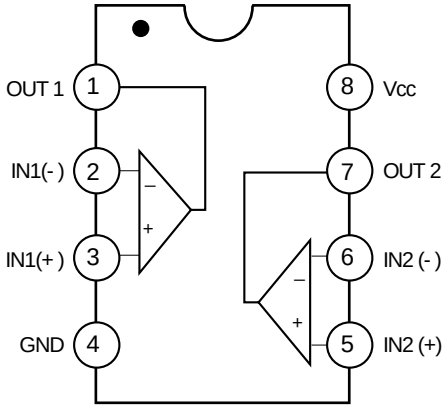
BLOCK DIAGRAM

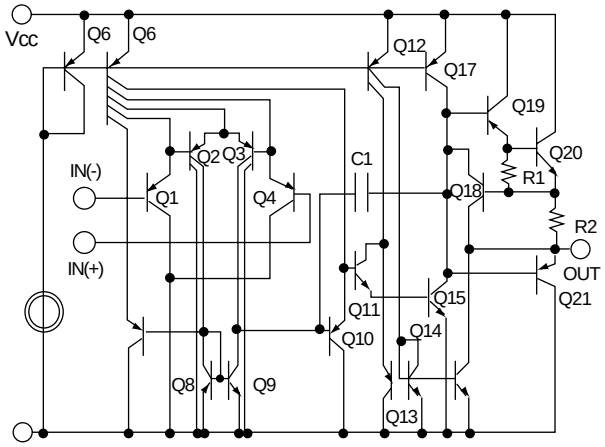
8 DIP



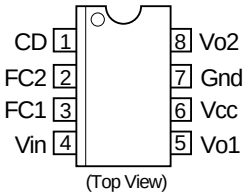
8 SOP



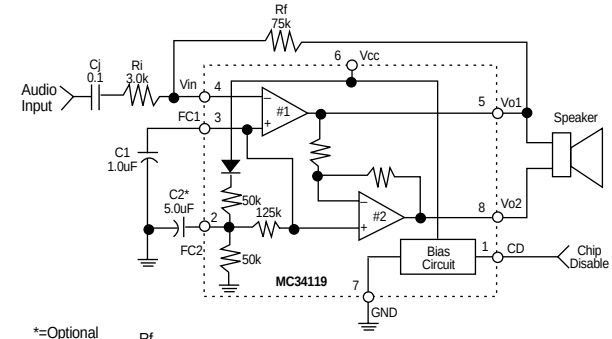




PIN CONNECTIONS

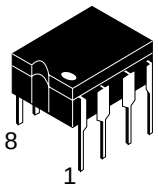


Block Diagram Simplified Application

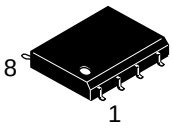


*=Optional
Differential Gian=2 x $\frac{Rf}{Rj}$

This device contains 45 active transistors.



P SUFFIX
PLASTIC PACKAGE
CASE 626



D SUFFIX
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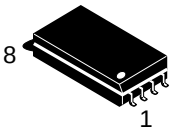
CASE 751
(SO-8)



DTB SUFFIX
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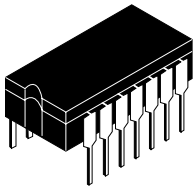
CASE 948J
(TSSOP)

14DIP



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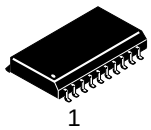
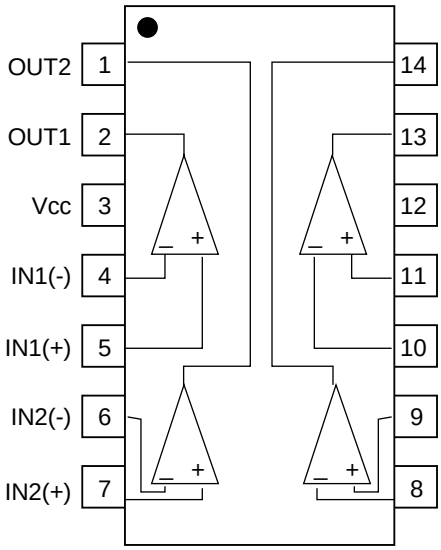
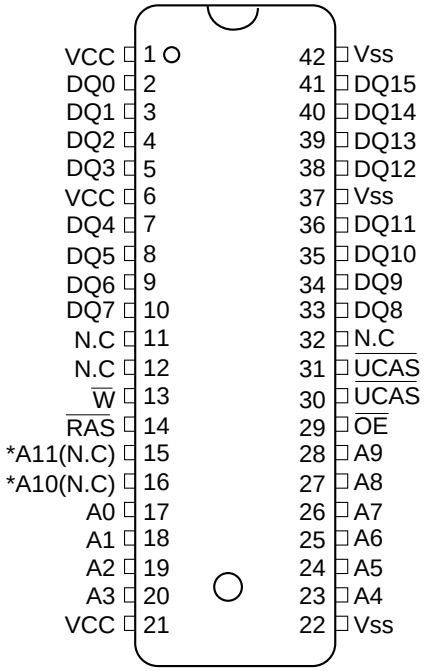


BLOCK DIAGRAM

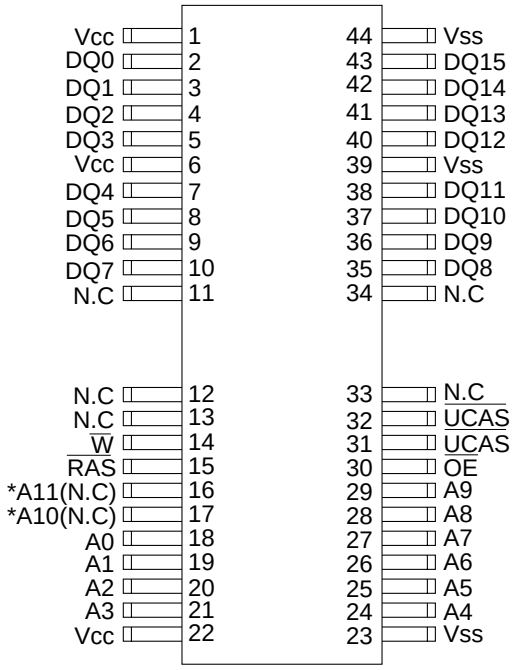


PIN CONFIGURATION (Top Views)

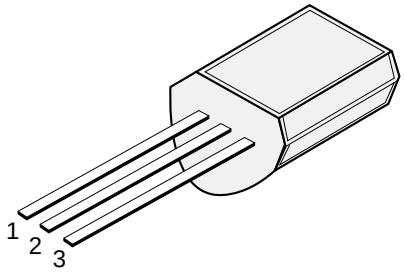
KM416C/V10(2)00BJ



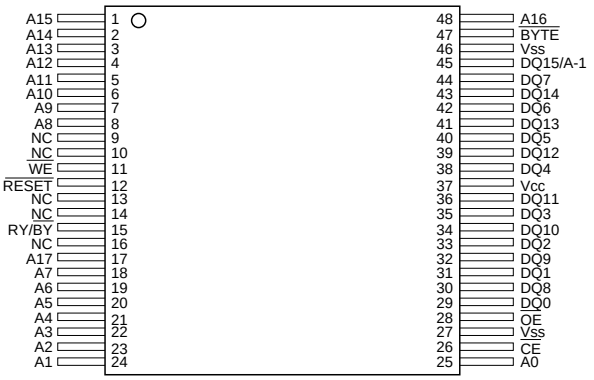
KM416C/V10(2)00BT

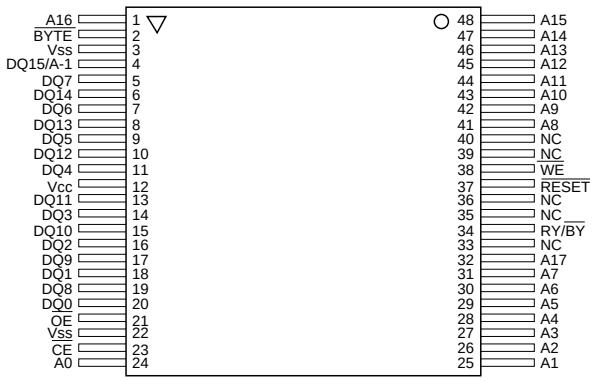


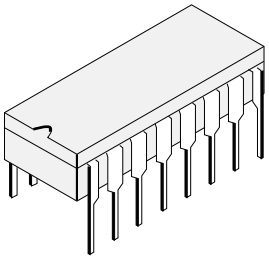
TO-92



1.Emitter 2.Base 3.Collector

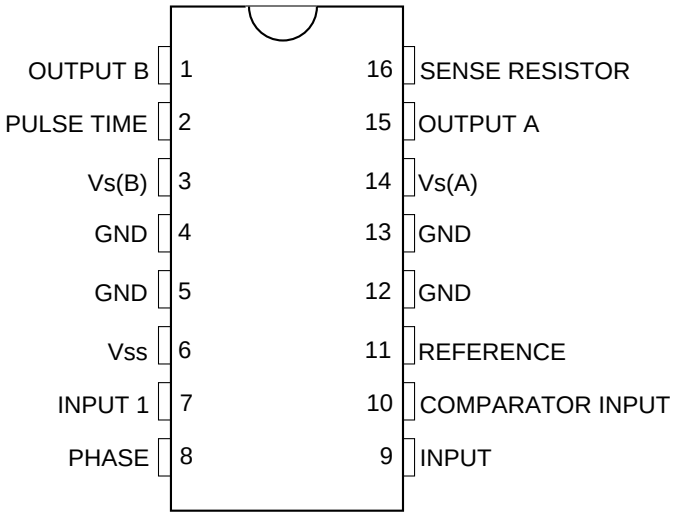




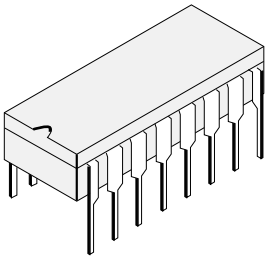


Powerdip 12+2+2
(Plastic Package)

ORDER CODE:PBL3717A

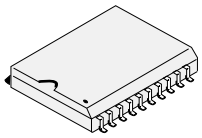


Powerdip 12+2+2



ORDERING NUMBERS:
TEA3718SDP
TEA3718DP

SO-20



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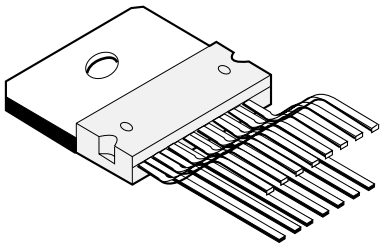
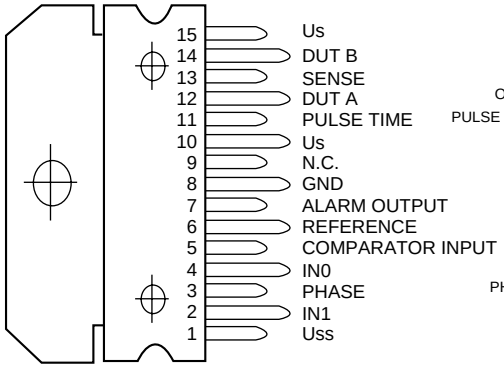
TEA3718SFP

MULTIWATT-15



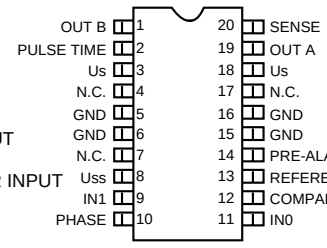
ORDERING NUMBER : TEA3718SP

TEA3718SP
(Multiwatt-15)

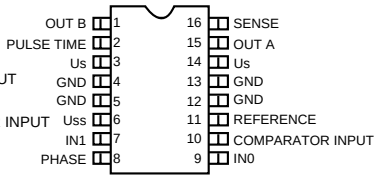


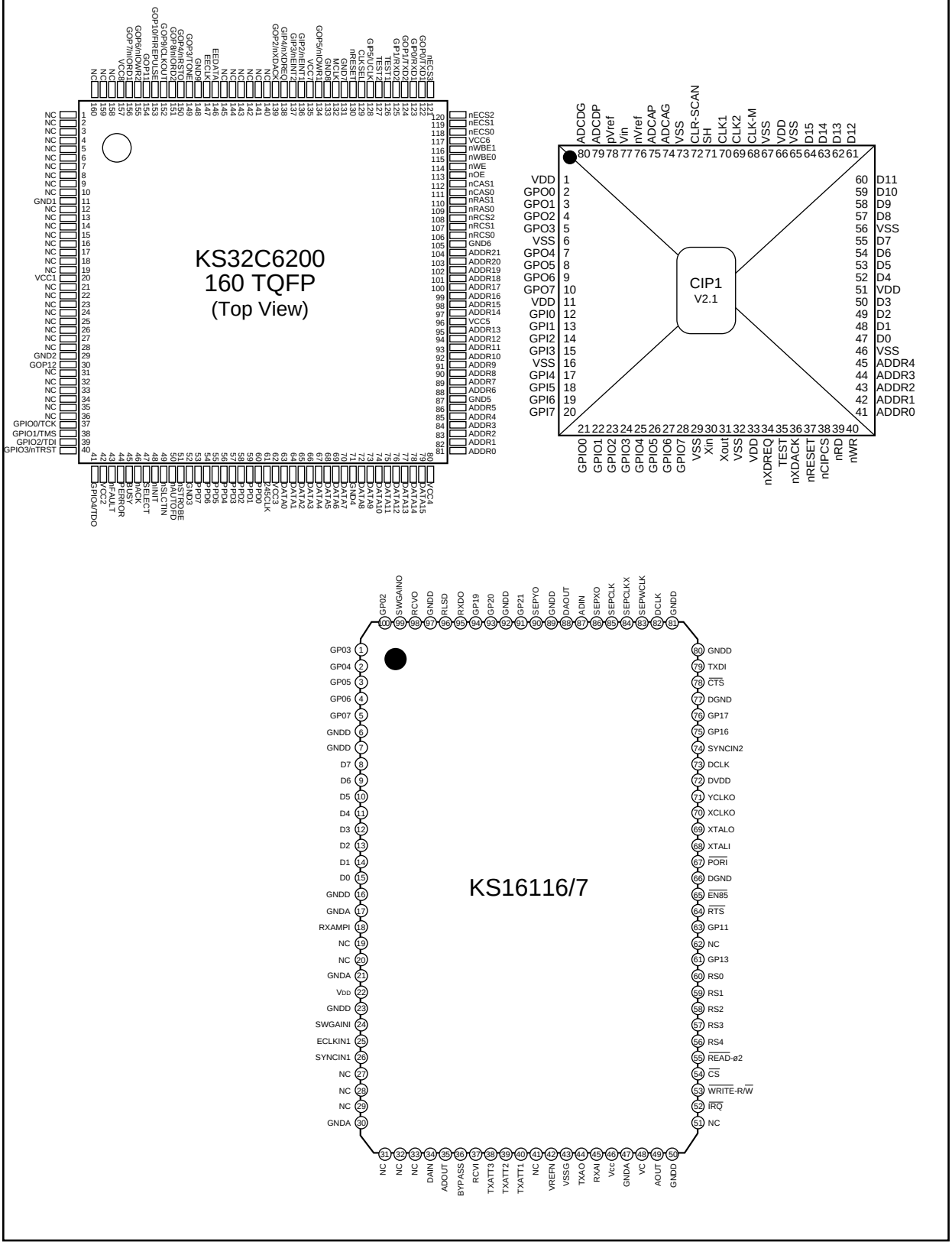
Note:HEATSINK SURFACE CONNECTED TO PIN B

TEA3718SFP
(SO-20)



TEA3718DP
TEA3718SDP
(Powerdip 12+2+2)




KS32C6200
160 TQFP
(Top View)
CIP1
V2.1
KS16116/7

2-3 Chip Replacement (SMD parts)

2-2-1. Precautions for Chip Replacement

1. See to it that the soldering iron does not touch parts directly. In particular, TSOP may be easily damaged by heat.
2. Handle the soldering iron with care and avoid using the same many times. Some parts can be damaged by sudden heat. Preheat parts for minutes at about 100°c before soldering them.
3. The temperature of the soldering iron should remain at about 240°c Use a 280°c iron for bigger parts.
4. Thin (0.3mm) solder used for chip parts does not contain enough flux. Use additional flux.

* For computers and OA systems, water-soluble flux is used. Water-soluble flux and solder are also good for replacing parts and repairing this product. Improper flux may corrode the soldered part and cause serious defects to the system.

5. Be careful not to damage the circuit pattern when you disjoin soldering. The pattern should be clean because there are a lot of pins close together on IC.
6. Be careful not to cause a short circuit between close pins.
7. Locate parts in place. It has a great influence on soldering.
8. Do not use repaired parts again.
9. Check the soldered part.
10. Defective variable resistors are not adjustable. Be sure to replace them.
11. After finishing the job, check if there are cold soldered parts.

2-2-2. Tools to Replace Chips

The following tools are used to replace chip parts.

- iron with thin tip
- iron with small and flat tip
- solder remover
- ventilation device
- tools to lift flat parts
- flux that can be cleaned with water
- 0.3mm thin solder that can be cleaned with water
- wire to remove solder
- tweezers

2-2-3. Chip Resistance & Chip Condenser

2-2-3 (a) Type

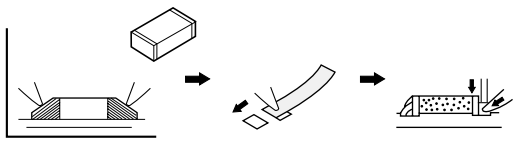
There are the following types of chip resistance and chip condensers.

- There are the following types of thin film and chip condensers.
- Carbon Film chip resistance
- Metal Film chip resistance
- Chip ceramic condenser
- Chip variable resistance

2-2-3 (b) Removal

Use 2 soldering irons.

a. Use a thin-tip iron.
b. Keep about 280°c
c. Apply heat to both ends of a part at the same time.
d. Remove it with the tip of the iron while heating.
e. Remove the remaining solder on PCB completely with solder removing wire. It should be done to install a new part.



2-2-3 (c) Installation

a. Clean the place where a new part will be located.
b. Apply water-soluble flux.
c. Set a part correctly in place. Prevent it from shifting.
d. Stick the part fast without contacting it directly with the soldering iron. Put 0.3mm solder between the iron and the part so that it can melt into the part.
e. Check the soldered part with a magnifier.

2-2-4. Chip Tantalum Condenser and Chip Filter

2-2-4 (a) Type

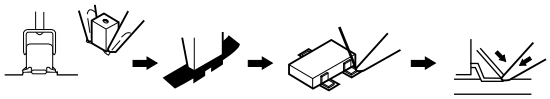
There are the following types of chip tantalum condenser and chip filter.

- Chip coil
- Chip tantalum condenser
- Chip tantalum electrolysis condenser
- Chip aluminum electrolysis condenser
- Chip transformer
- Chip filter

2-2-4 (b) Remoral

1. Use a special solder-removing iron.
   a. Choose an iron tip that suits the size of the part.
   b. Put the iron tip to the part to be soldered.
   c. Remove the part when solder melts.
   d. Remove the remaining solder completely with solder-removing wire.

2. Use two irons.
   a. Use an iron with small flat tip.
   b. Apply heat to both ends of the part at the same time.
   c. Remove the part with the tip of the iron while melting.
   d. Remove the remaining solder completely with solder removing wire.



2-2-4 (c) Installation

1. Clean the place where new parts will be installed.
2. Apply water-soluble flux.
3. Locate a part exactly in place. Be careful not to shift it.
4. Stick the part fast with a soldering iron not contacting it directly. Put 0.3mm solder between the iron and the part so that it can melt into the part.
5. Check the soldered part with a magnifier.

2-2-5. Chip Variable Resistance, Chip Variable Condenser, Diode & Transistor

Chip Variable Resistance, Chip Variable Condenser, Diode & Transistor

2-2-5 (a) Type

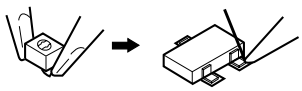
There are the following types.

- Chip Variable Resistance
- Chip Variable Condenser
- Diode
- Transistor

2-2-5 (b) Removal

Use two soldering irons.

a. Use an iron with small flat tip.
b. Apply heat to both ends of a part at the same time.
c. Remove the part with the tip of the iron while solder melts.
d. Remove the remaining solder completely with solder removing wire.



2-2-5 (c) Installation

1. Clean the place where new parts will be installed.
2. Apply water-soluble flux.
3. Locate a part exactly in place. Be careful not to shift it.
4. Stick the part fast with a soldering iron not contacting it directly. Put 0.3mm solder between the iron and the part so that it can melt into the part.

2-2-6. Chip IC

2-2-6 (a) Type

There are the following types of chip IC.

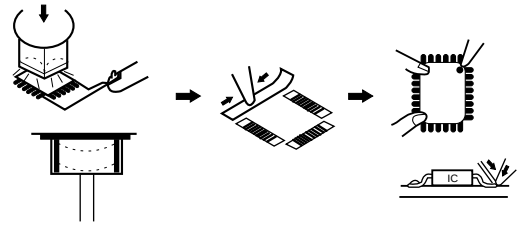
1. SOP (Small Outline Package) IC
2. SSOP (Shrink Small Outline Package) IC
3. VSOP (Very Small Outline Package) IC
4. QFP (Quad Flat Package) IC
5. VQFP (Very Quad Flat Package) IC
6. PLCC (Plastic Leaded Chip Carrier) IC
7. TSOP (Thin Small Outline Package) IC

2-2-6 (b) Removal

1. Use a special solder-removing iron.
   a. Choose an iron tip that suits the shape and the size of IC.
   b. Use 'thin' tip to contact legs of IC.
   c. Put the tip right in front of the legs of IC.
   d. Twist the iron carefully when solder melts.
   e. Raise and remove IC.
2. Use a ventilation device.
   a. Choose an injector that suits IC.
   b. Choose the temperature and the ventilation speed. (normal: temperature - 7, speed - 4)
   c. Use IC-removing tools.
   d. Preheat it for about 5 seconds with the ventilation device. And apply heat with the injector until IC can be removed from the board with IC removing tools.

2-2-6 (c) Installation

1. Remove the remaining solder completely with solder-removing wire.
2. Clean the place to be soldered.
3. Apply water-soluble flux.
4. Put IC in place and solder the legs of opposite direction.
5. Solder each leg carefully with thin tip.
6. Remove solder with solder-removing wire if there is a short circuit.
7. Check the soldered part with a magnifier.



3. Specifications

3-1 Specifications

Specification & Features

1. Printer

1-A. Set

Technology		Thermal Inkjet 1-pen & print head swapping type
Speed	Color	3PPM at draft mode (6005300 DPI)
	Mono	7PPM at draft mode (6005300 DPI)
Resolution	Color	600 5 600DPI (120051200 DPI addressable)
	Mono	600 5 600DPI (120051200 DPI addressable)
Printing Width		8 Inch
Feeding Method	Automatic	100 sheets for normal cut sheets, coating paper
	Manual	Recommended for thick media, fashion paper, envolope, postcard, Banner paper
Emulation		Host Based Printing (GDI)
Printer Driver		Window 3.1/3.11 and Windows 95 drivers
Interface		IEEE 1284 Compatible Parallel Interface (ECP)

1-B. Ink Cartridge Supply

	Mono Ink	Color Ink
Print Head	208 nozzles	192 nozzles
Ink Type	Pigment	Dye
Ink Color	Black	Color
Ink Yield	About 600 sheets	About 200 sheets

2. Scanner

Technology		CCD
Scanner Type		Color/Mono
TWAIN Compatible		Yes
Pre-Scan		Using Carrier Sheet
Speed	Color	about 1 PPM
	Mono	about 2 PPM
Resolution	Color	300 X 300 DPI (for SmartJet-C only)
	Mono	300 X 300 DPI
Gray Scale		256 Level
Printing Width		8 lnch
Feeding	Manual	Yes
Interface		IEEE 1284 Compatible Parallel Interface (ECP)

Compatibility	ITU-G3
Scan Method	CCD Shuttle Scanning Method
Scan Width	Max. 8.5 Inch, Effective : 8 Inch
Document Feeding Method	Manual Feeding Method
Guide	Document In-put Guide
Stacker	None
Handset	None
Keys on OPE	4EA (Ready, Cartridge, FF/STOP, START/COPY))
LEDs on OPE	3EA (Ready, Busy, Scan/Fax)
Real Time Clock	None
Fax Monitoring Speaker	Yes
Ring Volume Control Switch	None
Paper Tray	BIN Type, up to 100 sheets
Modem Speed	Max 9600 bps
Coding Method	MH, MR, MMR, Error Correction Mode
LCD	None
Answering Machine I/F	None
Extension Phone I/F	1-Jack, Extension Phone Transfer
PC Interface	IEEE 1284 Parallel Interface (ECP)
Fax Send Resolution	- Standard : 200 x 100 dpi - Fine : 200 x 200 dpi - Superfine : 300 x 300 dpi

Feature		Use Ext. Telephone	Use PC
Gray Scale		- Auto Contrast	- Auto Contrast - 256 level with Error diffusion
Memory Transmission		None	Yes
Memory Rx		Yes	Yes
Receive Mode		- Tel, Fax	- Fax - PC Rx
Telephone	One Touch Dial	*No	70 Numbers
	Speed Dial	*No	
	Chain Dial	*No	No
	On Hook Dial	*No	No
	Last Number Redial	*No	No
	Auto Busy Redial	*No	No
	No Power Operation	*No	No
	Hold & Mute	*No	No
	Pause	*No	Yes
	Ring Volume Control	*No	No
	Flash	*No	No
	Tone/Pulse Switch	*No	Yes
Others	Sensors	No paper sensor, Paper jam sensor	
	Error Indicator	Yes (On LED)	Yes (On PC Screen)
	Voice Request	No	No
	TTI	Yes	
	Rx Terminal ID	No	No
	Polling	No	No
	DRPD	U.S.A : Yes, Other countries : No	
	Mercury	No	No

* The marked “No” can be provided by telephone’s feature.

Feature		Use Ext. Telephone	Use PC
Report & List Print out	Tx/Rx Journal	No	Yes
	Delayed Dial List	No	No
	System Data	No	Yes
	Tel Number List	No	Yes
	Help List	No	No
Copy	Copy	Yes (1-Page)	Yes (99-Page)
	Gray Scale	No	Yes
	Reduction Copy	No	Yes
	Enlargement Copy	No	No

4. Electrical & Environment

Power Source	AC 220~240V, 0.3A, 50~60Hz
Dimension (W5D5H)	422(mm) 5 237(mm) 5 180(mm)
Weight	3.7kg

5. Accessories

Tel	Handset	No
	Curl Cord	No
	Tel Line	Yes
Power Cord		Yes
Software		1 CD-ROM (Manual, Printer Driver, PC-Fax)
Manual		1EA
Ink Cartridge	Mono Ink	Yes
	Color Ink	Yes

* Xerox's OCR S/W and scanner editor are recommended for its own use.

4. Disassembly & Assembly

4-1 Taking Off Front Cover

This section explains with illustrations how to disassemble the printer.
It does not explain how to assemble it, because it is the very reverse of disassembly.

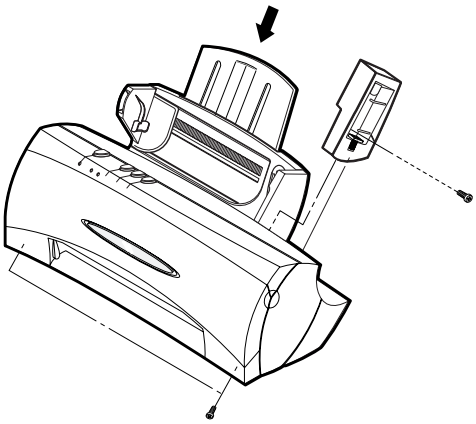


Fig.4-1. Taking Off Front Cover -1

- ▶ Disconnect power cords and printer cable from the printer.
- ▶ Unscrew 1 screws on rear cover to separate ink cartridge storage.
- ▶ Push Guide Extension in the direction of the arrow symbol.
- ▶ Remove 2 screws between front cover and bottom cover.

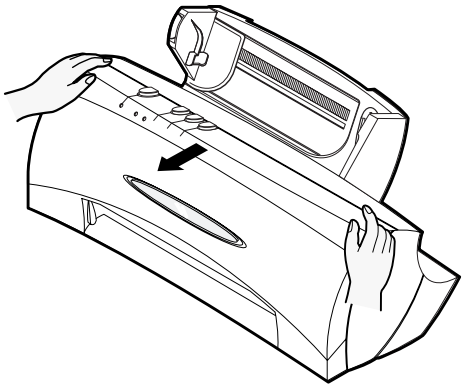


Fig.4-1. Taking Off Front Cover -2

- ▶ Hold the upper part of front cover with both hands and lift the front cover, holding down rear cover.
- ▶ Separate front cover from rear cover in the direction of the arrow symbol.

4-2 Taking off Rear Cover

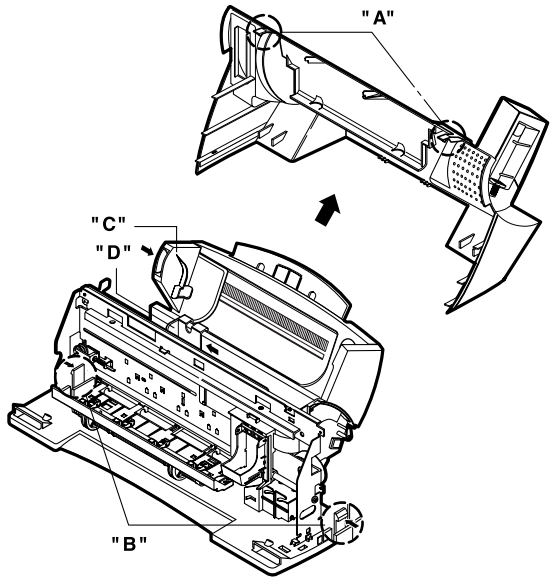


Fig.4-2. Taking Off Rear Cover

- ▶ Push in the paper guide (“C”) of automatic sheet feeder and place it inside of A4 line.
- ▶ Push the guide manual(L) (“D”) left.
- ▶ Unhook right and left hooks(“A”) on the upper part of rear cover.
- ▶ Unhook right and the left hooks of bottom cover by pushing them in.
- ▶ Separate rear cover in the same direction that the automatic sheet feeder is mounted.

4-3 Separating Automatic Sheet Feeder

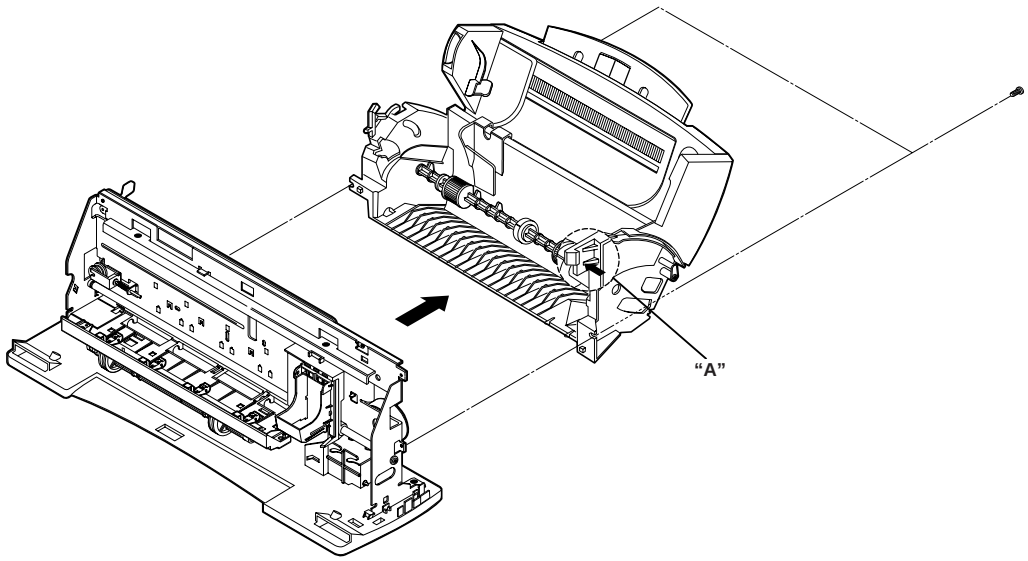


Fig.4-3. Separating Automatic Sheet Feeder

- ▶ Remove various wires fixed on the side of automatic sheet feeder.
- ▶ Unscrew 2 screws on automatic sheet feeder.
- ▶ Push slightly and disconnect the hook (“A”) fixed to the main frame.
- ▶ Separate automatic sheet feeder by pulling it in the direction of the arrow symbol.

4-4 Separating Main Circuit Board

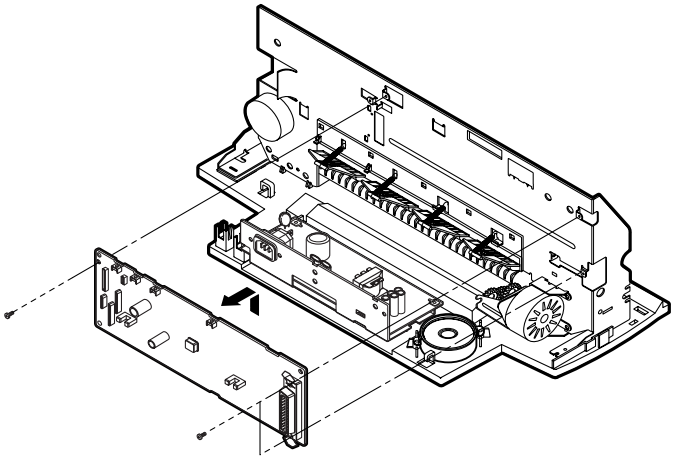


Fig.4-4. Separating Main Circuit Board

▶Separate various connectors connected with the main board.
▶Separate head cable connected with the main board.
▶Unscrew 3 screws fixed to the main board and separate the main board in the direction of the arrow symbol.

4-5 Separating Power Circuit Board

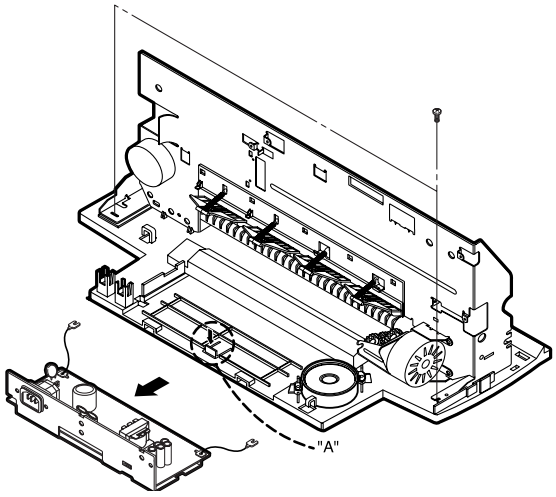


Fig.4-5. Separating Power Circuit Board

▶Unscrew 2 screws that fix the right and left ground wire.
▶Press the hook (“A”) on the middle of the housing and separate power circuit board.

4-6. Separating Printer Engine

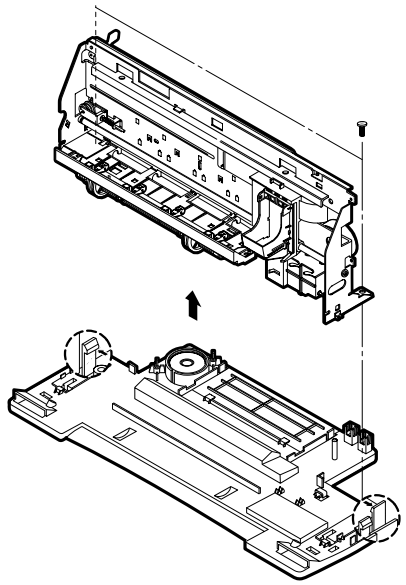


Fig.4-6. Separating Printer Engine

- ▶ Remove 2 screws fixed to printer engine unless you unscrewed them at the previous stage.
- ▶ Push outside right and left hooks on the side of the engine, unhook them, and separate the engine in the direction of the arrow symbol.

4-7. Separating Home Assembly

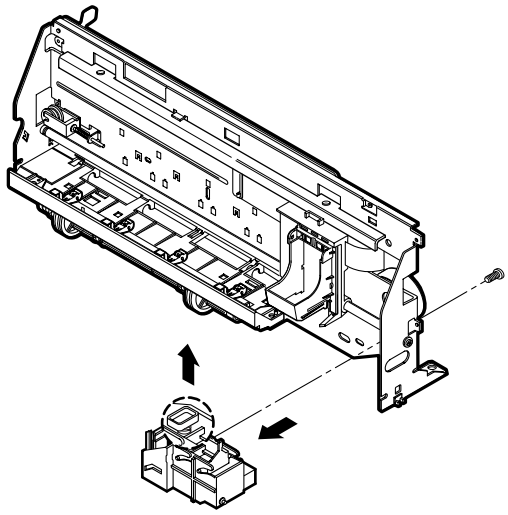


Fig.4-7. Separating Home Assembly

- ▶ Unscrew 1 screw fixed to the back of the engine and separate home assembly from the engine.
- ▶ Pull out the wiper and the cap in the direction of the arrow symbol to separate them.

4-8. Separating Carrier Assembly

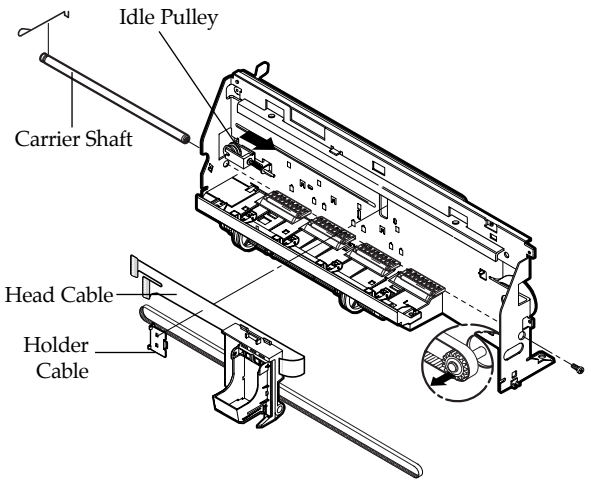


Fig.4-8. Separating Carrier Assembly

- ▶ Separate FPC cable connected with the main board.
- ▶ Separate the holder cable fixed to the main frame.
- ▶ Remove 1 screw on the right of the engine and spring on the left of the engine.
- ▶ Push the left idle pulley in and separate the right part of the timing belt from motor pulley.
- ▶ Pull out carrier shaft and separate carrier Assembly.

4-9. Separating Frame Base Assembly

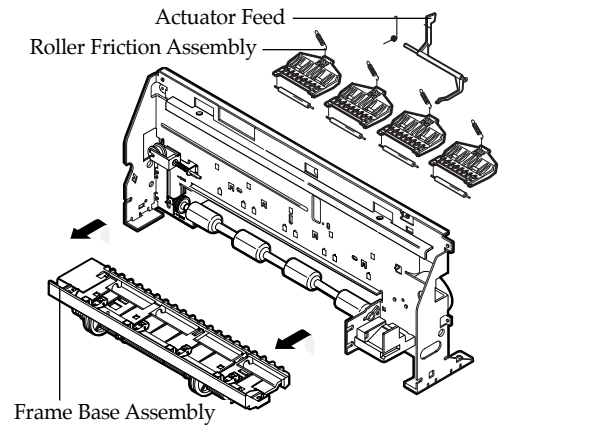


Fig. 4-9. Separating Frame Base Assembly

- ▶ Refer to 4-8 to separate carrier Assembly first.
- ▶ Separate 4 roller friction Assembly on the back of the engine and then actuator feed.
- ▶ Separate frame base Assembly by lifting the back.

4-10 Separating Feed Roller Assembly

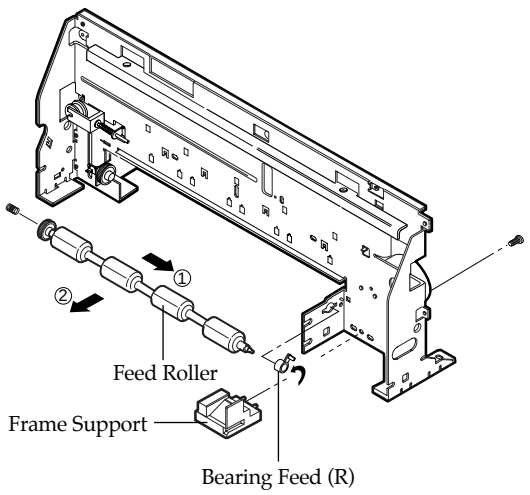


Fig.4-10. Separating Feed Roller Assembly

- ▶ Refer to 4-9 to separate frame base Assembly first.
- ▶ Unscrew 1 screw fixed to the back of the engine and separate frame support from the engine.
- ▶ Turn the bearing feed (R) in the direction of the arrow symbol to separate it from the main frame.
- ▶ Push feed roller on the right to separate it from the main frame.

4-11 Separating Bracket Line Feed Assembly

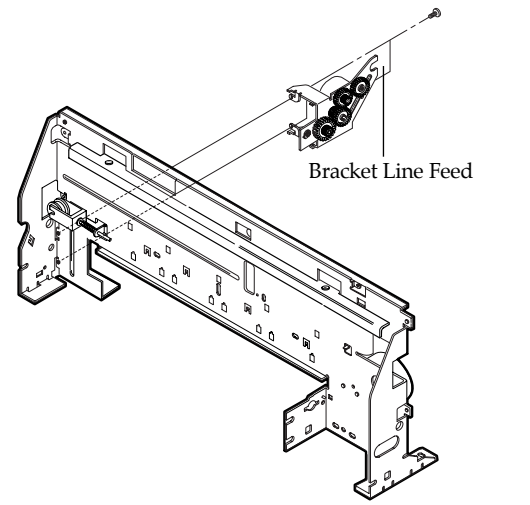


Fig.4-11. Separating Bracket Line Feed Assembly

- ▶ Refer to 4-10 to separate feed roller Assembly.
- ▶ Unscrew 2 screws and separate bracket line feed Assembly.

4-12 Separating Automatic Sheet Feeder

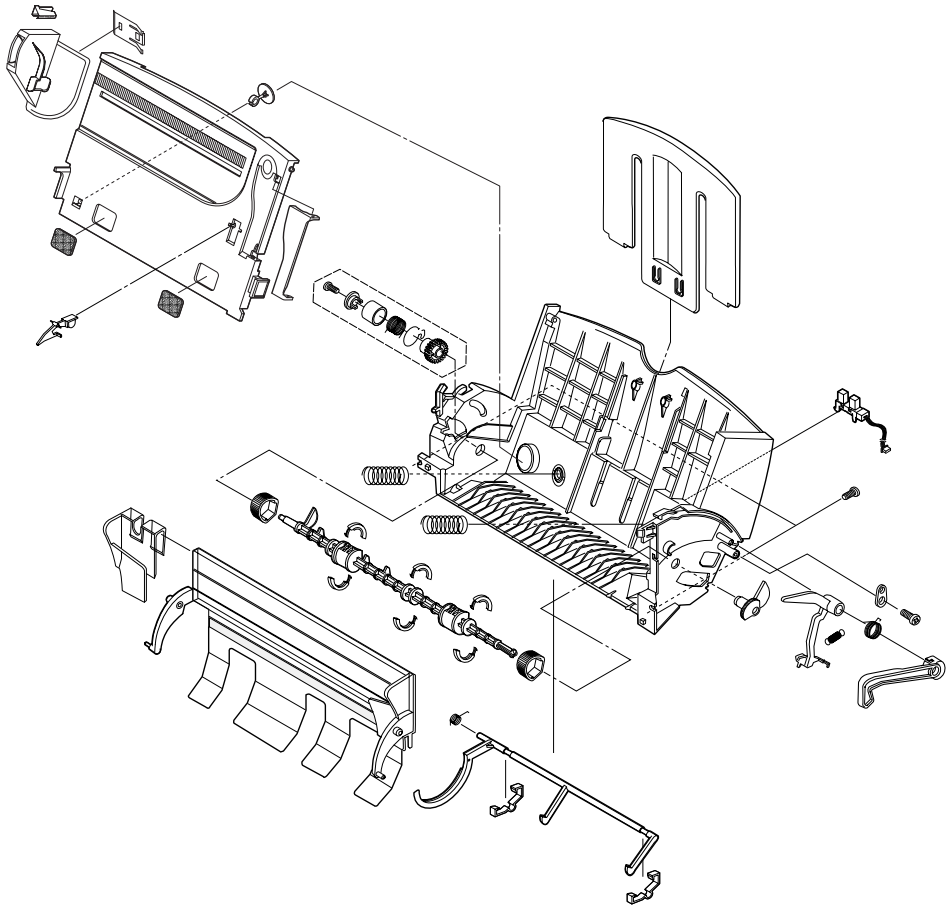


Fig.4-12. Separating Automatic Sheet Feeder

- ▶ Separate the manual plate from frame ASF.
- ▶ Separate the cam pickup on the right and then unscrew the right screw to separate the finger part.
- ▶ Pull out the clutch and then unscrew 1 left screw to separate the clutch part.
- ▶ Separate the guide finger from shaft pickup.
- ▶ Push shaft pickup to the right to separate.
- ▶ Bend plate-knockup slightly and then separate it from the frame ASF.

4-13. Separating LIU board

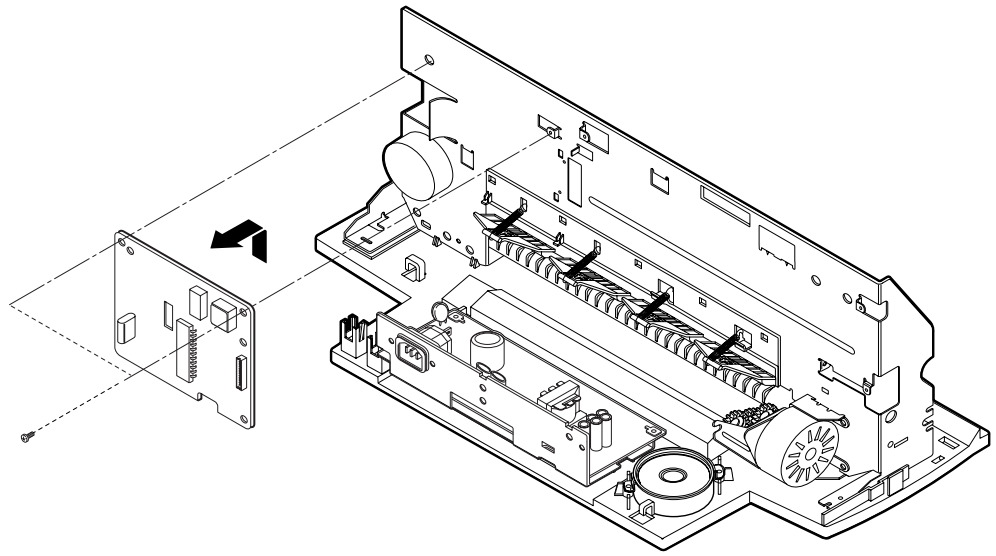


Fig.4-13. Separating LIU board

- ▶ Refer to 4-12 to separate automatic sheet feeder from the engine.
- ▶ Separate the connector.
- ▶ Unscrew 2 screws fixed to LIU board.
- ▶ Separate LIU board from the engine in the direction of the arrow symbol.

4-14. Separating Scan Assembly

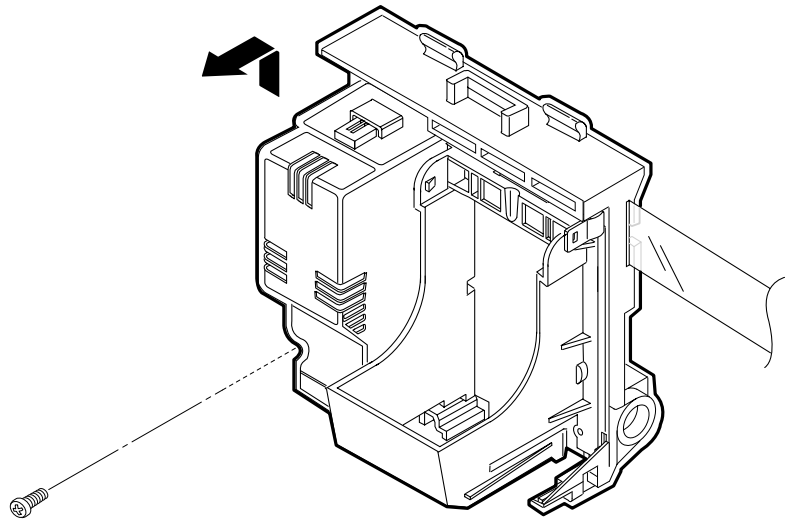


Fig.4-14. Separating Scan Assembly

▶ Unscrew 1 screw.
▶ Push up scan Assembly in the direction of the arrow symbol to separate it from the carriage.

4-15. Separating White Reference Sheet

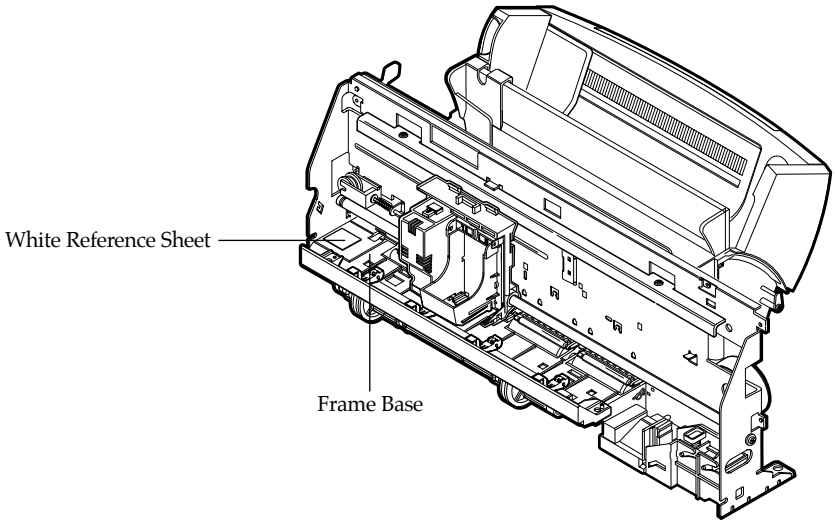


Fig.4-15. Separating White Reference Sheet

▶ Remove contaminated white reference sheet completely from the frame base.
▶ Ask for new white reference sheet.

5. CIRCUIT

5-1 MAIN PBA

5-1-1 SUMMARY

The main circuit that consists of CPU, MFP controller (built-in RISC processor core: ARM7TDMI) including various I/O device drivers, system memory, scanner, printer, motor driver, PC I/F, and FAX transceiver controls the whole system. The entire structure of the main circuit is as follows:

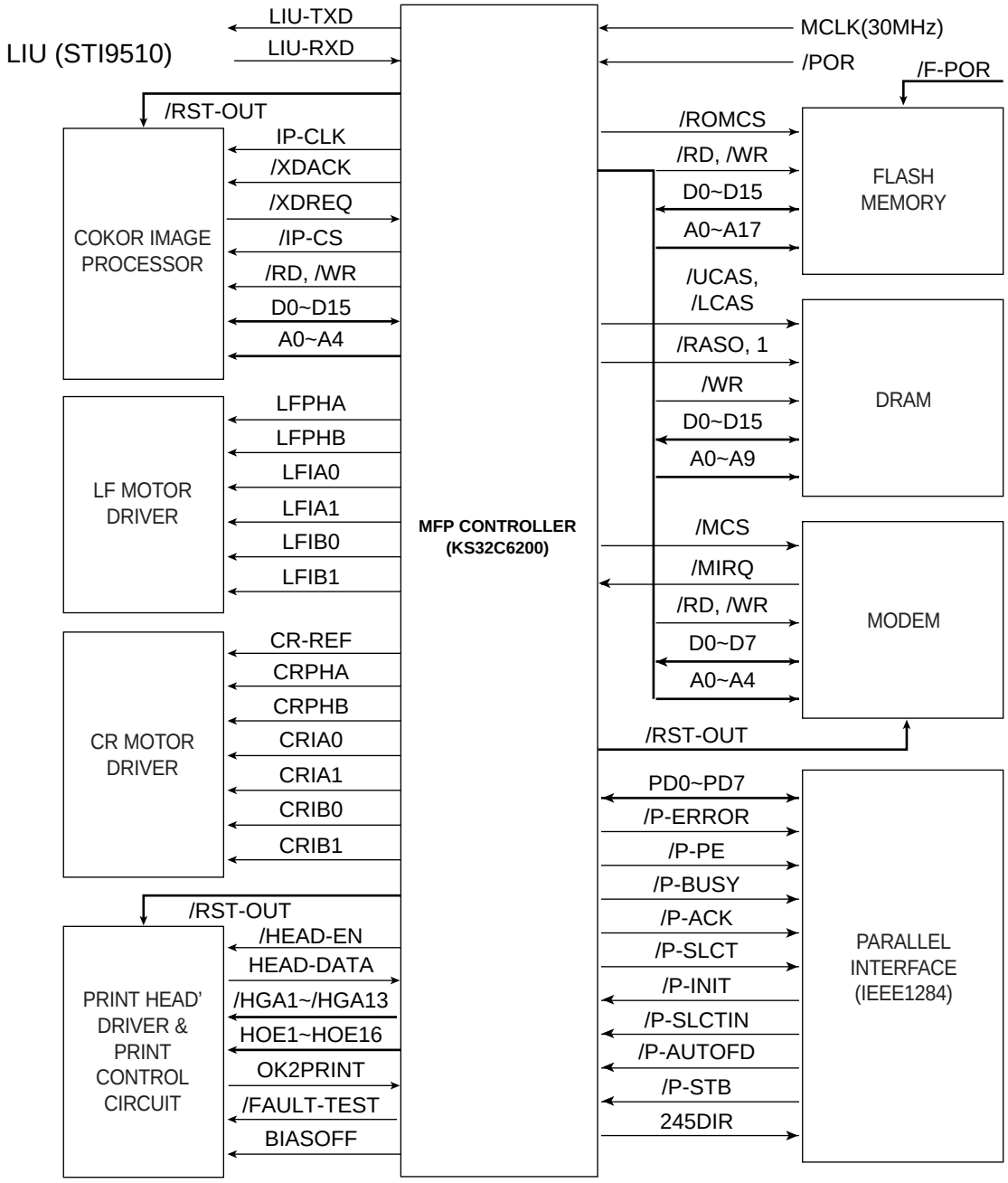


Fig.5-1-1. Entire Structure of Main Circuit for Each Key Signal

5-1-2 MFP CONTRLLER (KS32C6200 : U15)

MFP Controller consists of CPU(ARM7TDMI RISC processor), 2K-byte cache, data and address buses, serial communication part with LIU(Line Interface Unit), print head controller, parallel port interface, external DMA part to receive data from external color image processor (CIPIA:U17), LF/CR motor diver controller and I/O controller.

5-1-2-1. SYSTEM CLOCK

The internal clock frequency is 30MHz. 30MHz system clock (MCLK) supplied from the outside is used without being divided inside.

5-1-2-2. DATA & ADDRESS BUS CONTROL

- /RD & /WR
  /RD & /WR signals are synchronized with MCLK(30MHz) and become LOW ACTIVE.
  These signals are strobe signals used to read and write data when each CHIP SELECT is connected with /RD and /WR pin of RAM, ROM, MODEM and the outside devices and becomes active.

- CHIP SELECT (/CSO, /ROMCS, /MCS)
  - /IP-CS : CIP1A(U17) CHIP SELECT (LOW ACTIVE)
  - /ROMCS : ROM/FLASH MEMORY(U10) CHIP SELECT (LOW ACTIVE)
  - /MCS : MODEM(U21) CHIP SELECT (LOW ACTIVE)

  When each CHIP SELECT is low, data can be read or written.

- D0 - D15
  - 16bit data bus

- A0 - A17
  - ADDRESS BUS (A18 - A21 are reserved.)

5-1-2-3, LIU(Line Interface Unit) SERIAL COMMUNICATION PART

UART (Universal Asynchronous Receiver/Transmitter) at KS32C6200 enables the main and LIU to transmit serial data. The block diagram of UART is as follows: (Fig.5-1-2) KS32C6200 has 2 UART channels. Channel 0(RXD0, TXD0) is used here and the baud rate is 9600bps.

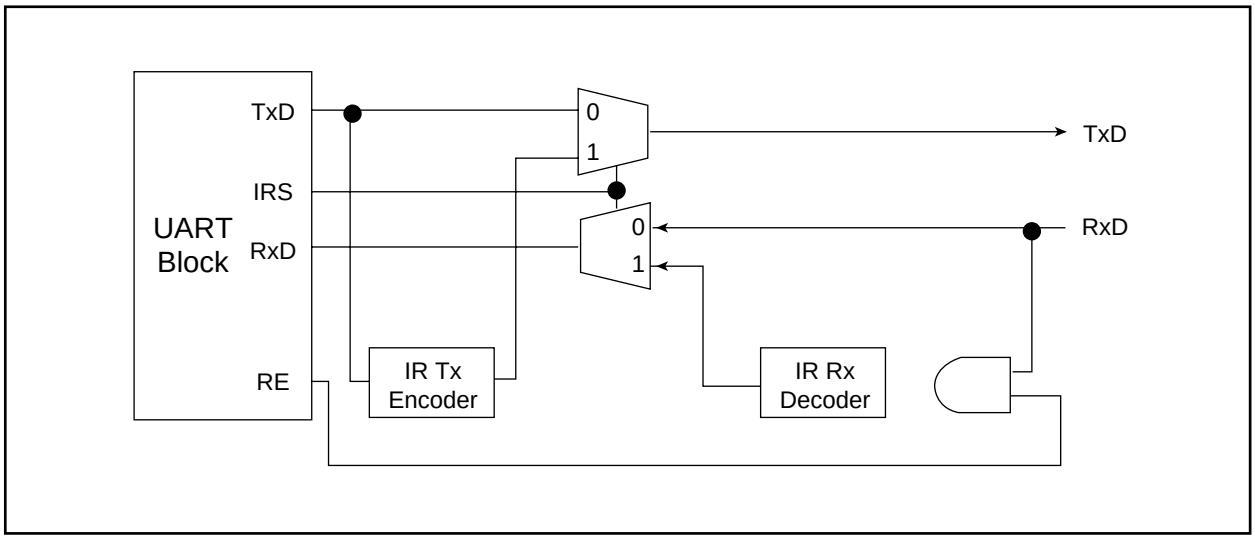
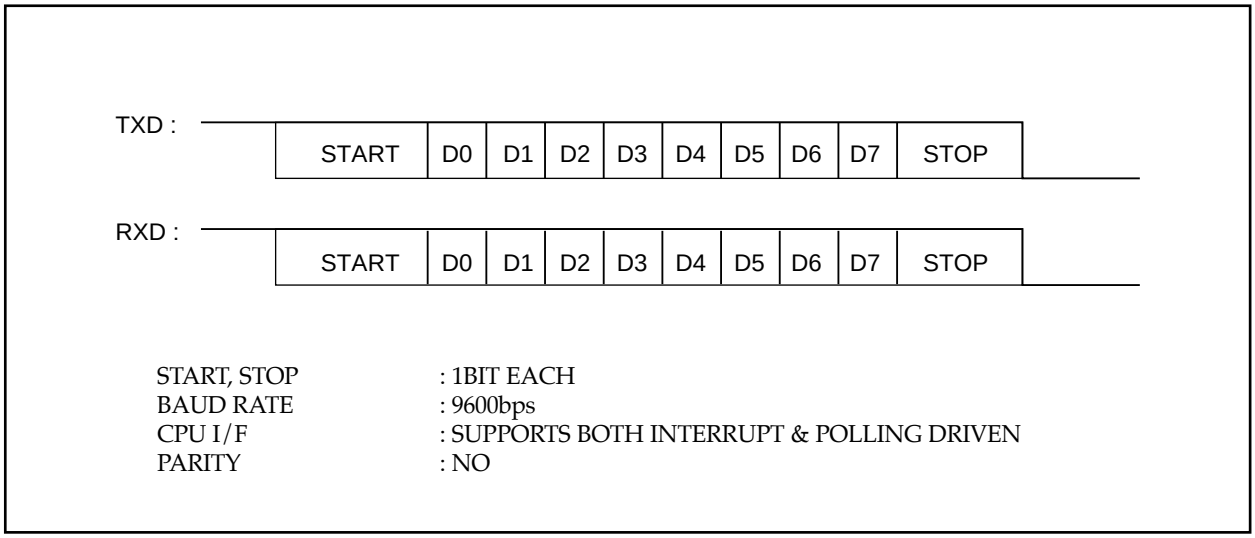


Fig.5-1-2. UART BLOCK DIAGRAM



START, STOP : 1BIT EACH
BAUD RATE : 9600bps
CPU I/F : SUPPORTS BOTH INTERRUPT & POLLING DRIVEN
PARITY : NO

Fig.5-1-3 UART DATA FORMAT

5-1-2-4 External DMA

It brings data from an external device (CIP1A:U17) using DMA channel 0. DMA REQUEST sent from an external device to KS32C6200 activates DMA ACKNOWLEDGE signal and drives DMA channel 0 to produce CHIP SELECT and READ STROBE (/RD) at the external device and bring data from it. It generates address of destination memory, CHIP SELECT and WRITE STROBE (/WR) in order to move this data into destination memory, and then stores the data.

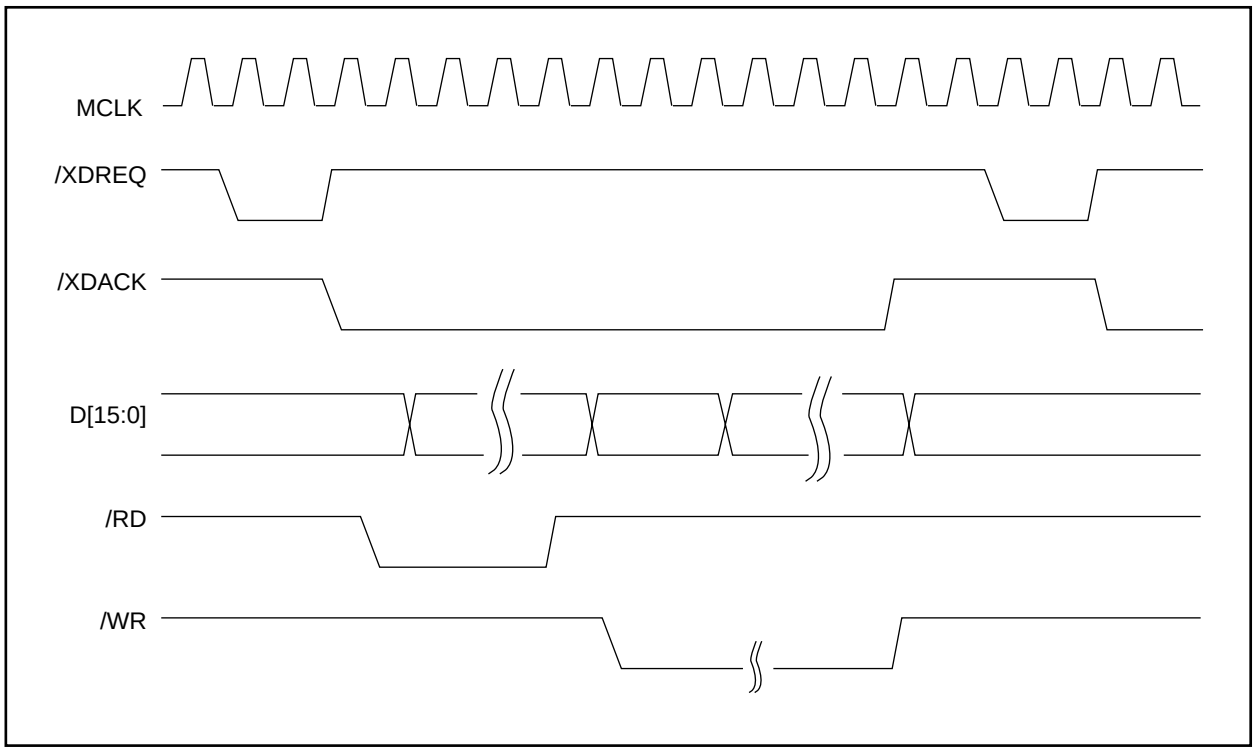


Fig.5-1-4 EXTERNAL DMA TIMING DIAGRAM

5-1-2-5. DRAM CONTROLLER

As KS32C6200 has DRAM controller in it, DRAM can be connected with external memory. The control mode of DRAM controller enabling EARLY WRITE, NORMAL READ, PAGE MODE, and BYTE/HALF WORD ACCESS supports EDO DRAM as well as normal DRAM. DRAM READ/WRITE signals are /RD and /WR signals used to control system buses. It supports CAS BEFORE RAS for DRAM REFRESH and self-refresh mode for DRAM backup. Connected with common /LCAS, /UCAS and RAS[1:0], it consists of 2 banks. Though each may be connected with up to 1M - 4M halfword, 512 Kbytes or 2 Mbytes are connected according to the model for this product.

5-1-2-6. PARALLEL PORT INTERFACE

This part connected with the computer through the centronics connector makes possible parallel interface with the computer. Data is transmitted according to the standard of IEEE P1284. This MFP controller supports compatibility mode the traditional way to transmit print data, nibble mode (4bit data) to upload data to the computer, and duplex high-speed transmission with the computer ECP(Extended Capabilities Port: 8bit data transmission) all together.
It enables PC data to be printed and scanned data to be uploaded quickly to the computer. Besides, various data transmission and reception with the computer such as uploading received fax data, downloading fax data to be sent, and monitoring system control signals and system conditions are carried out here.

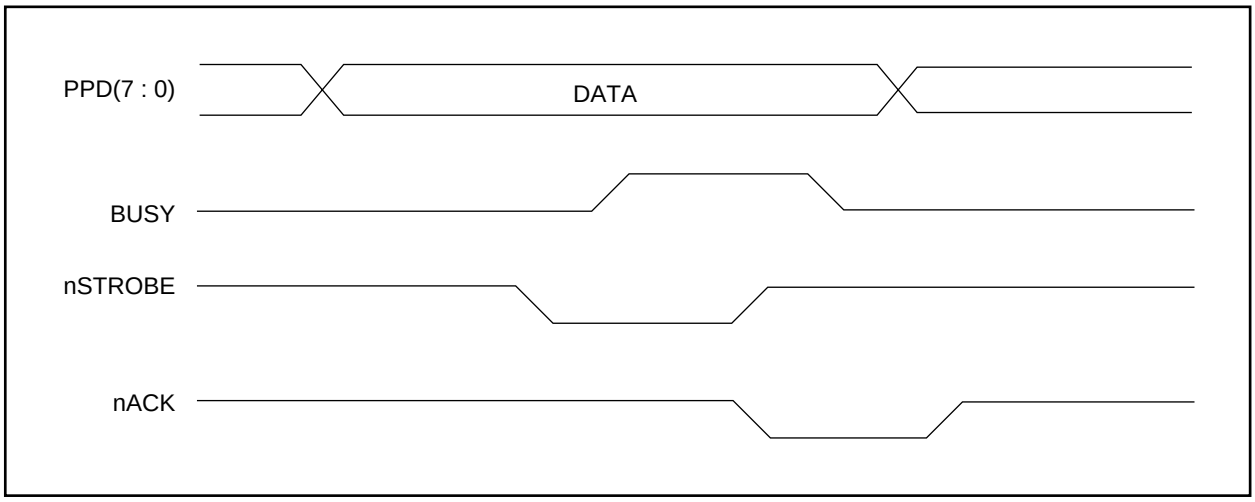


Fig.5-1-5 Compatibility Hardware handshaking Timing

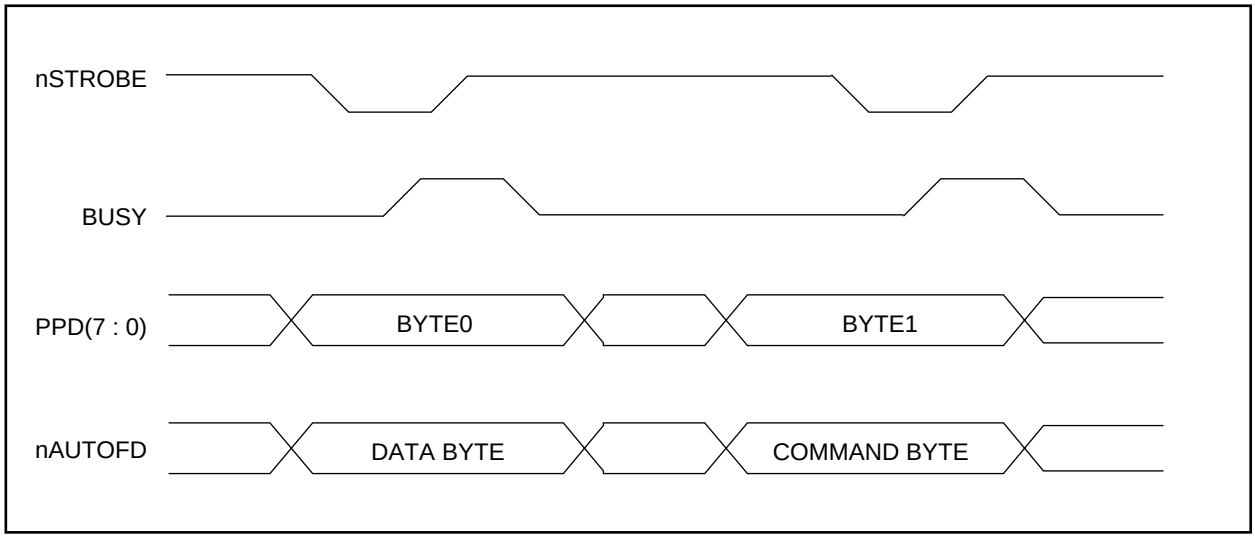


Fig.5-1-6 ECP Hardware Handshaking Timing (forward)

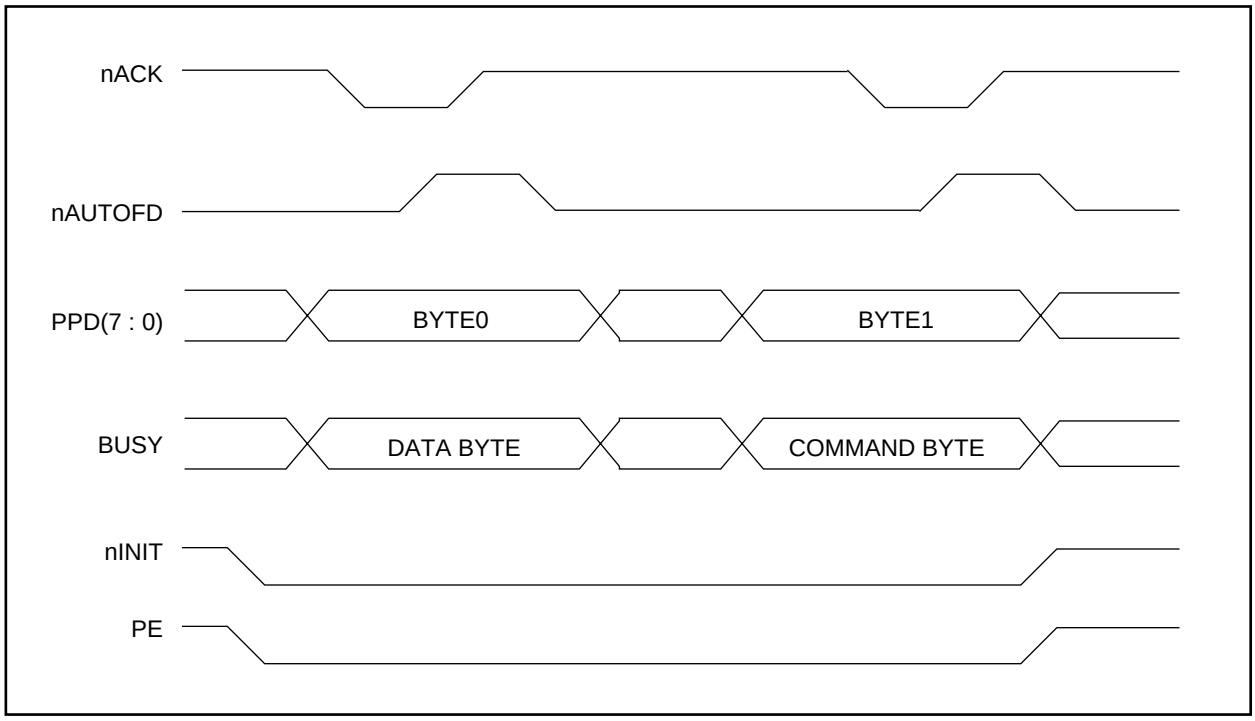


Fig.5-1-7 ECP Hardware Handshaking Timing (reverse)

5-1-2-7. INKJET HEAD CONTROLLER

This part produces major control signals used to drive INKJET head. It consists of signals to drive head nozzles, /PHGA[13:1], PHOE[16:1], /FAULT-TEST, /HEAD-EN, and BIASOFF, and consists of signals to check the status of the head, OK 2PRINT and HEAD-DATA.
It has double height print head system, 208 nozzles for mono and 192 nozzles for color, and uses /PHGA[13:1], /PHOE[16:1] signals and /HEAD-EN to drive these nozzles. Fig.5-1-8 is timing diagram of each signal.

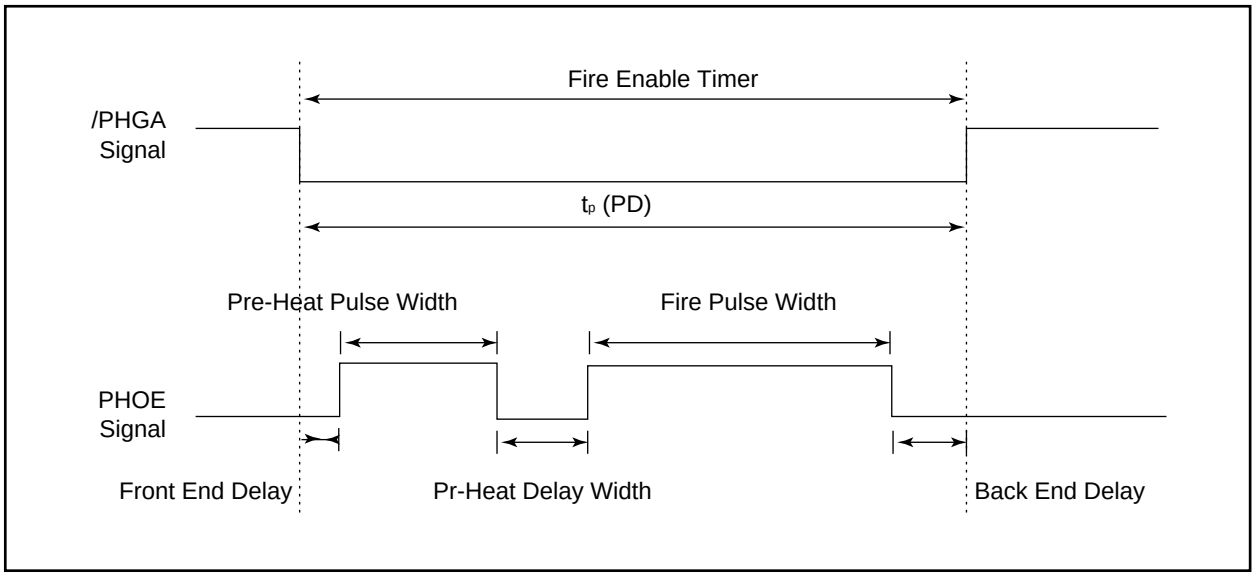


Fig.5-1-8 Timing Diagram to Drive Head

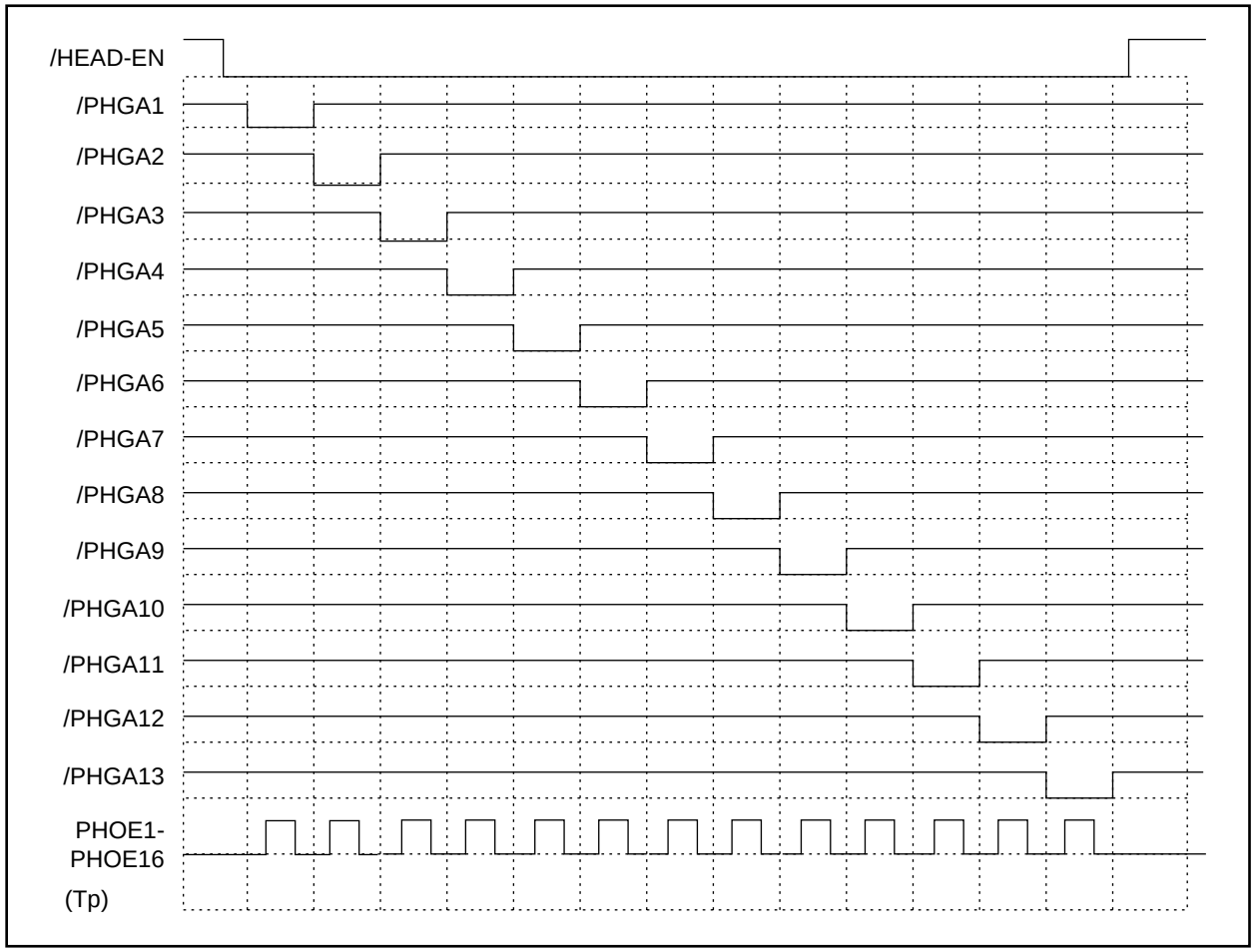


Fig.5-1-9. Timing Diagram for Each Nozzle

The above control signals are sent to head driver and the head driver converts these signals to the level (+11.75V) to drive head nozzles.

5-1-2-8. MOTOR CONTROLLER (CRPHA, CRPHB, CRIA0, 1, CRIB0, 1, LFPHA, LFPHB, LFIA0, 1, LFIB0, 1)

MFP Controller (KS32C6200:U15) supports 2 stepper motors. It controls CR(Carriage Return) motor used to read and print documents and LF (Line Feed) motor used to feed and eject paper.
CR motor controller can support 75, 150, 200, 300, 600, or 1200dpi according to resolution, while LF motor controller supports uni-polar and bi-polar according to the kind of motors. Though full step, half step and soft-ware control are possible for both, bi-polar CR motor is controlled half step and LF motor is controlled half step and quarter step here.

5-1-2-9. I/O PORT OF KS32C6200

PIN NAME	CIRCUIT NAME	I/O	STATE	DESCRIPTION
TXD 0 /GOP 0	LIU-TXD	0	-	UART DATA TO I-LIU CHIP IN LIU
TXD 1 /GOP 1	-	0	-	UNUSED
/EDACK /GOP 2	/XDACK	0	H	DEFAULT STATE
			L	DMA ACKNOWLEDGE
TONE / GOP 3	KEYCLICK	0	-	BEEP TONE
/RSTO / GOP 4	/RESET	0	H	WATCHDOG RESET OUT IS INACTIVE
			L	WATCHDOG RESET OUT IS ACTIVE
/IOWR 1 / GOP 5	/FAULT-TEST	0	H	DEFAULT STATE
			L	CHECK FAULT IN PRINTHEAD
/IOWR 2 / GOP 6	RX-CTL	0	H	MODEM RX PATH CONNECTION
			L	REMOTE START DETECTION PATH CONNECTION
/IORD 1 / GOP 7	/HEAD-EN	0	H	PRINTHEAD IS DISABLE
			L	PRINTHEAD IS ENABLE
/IORD 2 / GOP 8	TONE-CTL	0	H	MONITORING TX/RX SOUND
			L	BEEP SOUND
CLKOUT / GOP 9	IP-CLK	0	-	CIP CLOCK
FIREPS / GOP 10	/RST-OUT	0	H	EXT. CHIP IS ACTIVE
			L	EXT. CHIP IS RESET
/HSC / GOP 11	BIASOFF	0	H	PRINTHEAD BIAS OFF
			L	PRINTHEAD BIAS ON
/HSM / GOP 12	CR-REF	0	H	PRINT MODE IS LQ
			L	PRINT MODE IS DRAFT

PIN NAME	CIRCUIT NAME	I/O	STATE	DESCRIPTION
RXD 0 / GIP 0	LIU-RXD	I	-	UART DATA FROM I-LIU CHIP IN LIU
RXD 1 / GIP 1	/P-EXIT	I	H	PAPER IS NOT DETECTED
			L	PAPER IS DETECTED
/EINT 1 / GIP 2	/MIRQ	I	H	NO INTERRUPT FROM MODEM
			L	INTERRUPT FROM MODEM
/EINT 2 / GIP 3	OK2PRINT	I	H	NO FAULT IN PRINTHEAD
			L	FAULT IN PRINTHEAD
/EDREQ / GIP 4	/XDREQ	I	H	NO DMA REQUEST FROM CIP
			L	DMA REQUEST FROM CIP
UCLK / GIP 5	HEAD-DATA	I	-	CODE DATA FROM PRINTHEAD
TCK / GIOP 0	TCK	I/O	-	TEST PIN FOR EMULATOR (CLOCK)
TMS / GIOP 1	TMS	I/O	-	TEST PIN FOR EMULATOR (DATA MODE)
TDI / GIOP 2	TDI	I/O	-	TEST PIN FOR EMULATOR (DATA FROM EMULATOR)
/TRST / GIOP 3	/TRST	I/O	-	TEST PIN FOR EMULATOR (RESET TO TAP CON.)
TDO / GIOP 4	TDO	I/O	-	TEST PIN FOR EMULATOR (DATA TO EMULATOR)

5-1-2-10. RESET CIRCUIT

As for SMARTJET there are 2 power resets of primary reset(/F-POR) and secondary reset(/POR) and also reset by watchdog timer (/RSTO). Primary reset is used to initialize flash memory when the system is turned on, while secondary reset is used to initialize the whole system by initializing MFP controller (KS32C6200) after primary reset. Primary reset makes flash memory wait in READ mode to fetch program codes, and secondary reset makes the main controller (KS53C6200) wake up and initialize external peripherals to operate the system. Fig.5-1-10 is Power Reset Timing Diagram.

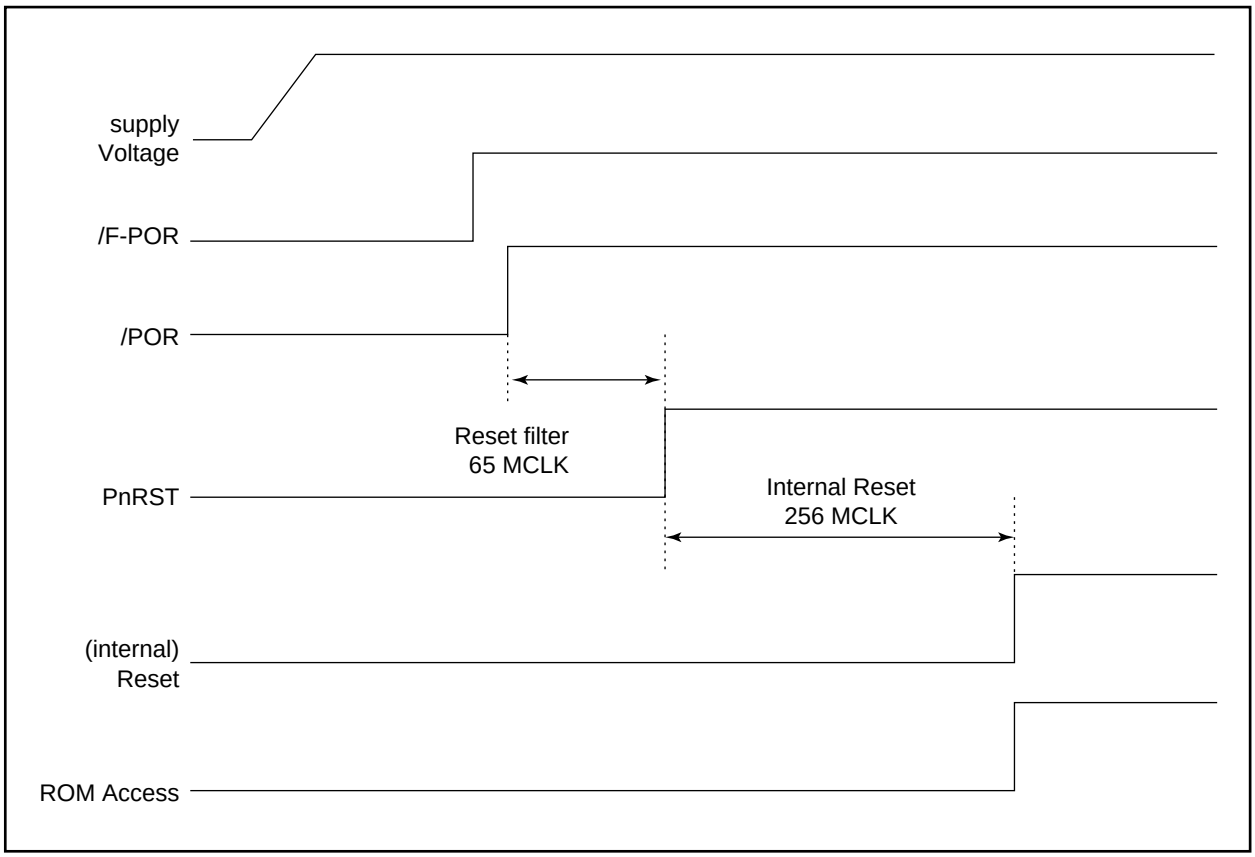


Fig.5-1-10 POWER RESET TIMING DIAGRAM

- POWER MONITOR (U16: KIA7045F)
  If +5V supplied to KIA7045F is so unstable as to reach +4.65V - +4.35V (typically 4.5V), it will recognize it as power failure. Then KIA7045F output terminal becomes low (0V) and the voltage is impressed to flash memory and KS32C6200, running RESET (LOW ACTIVE). Flash memory and KS32C6200 are reset first. Thereafter modem, print control parts and CIP(Color Image Processor) linked to /RST-OUT terminal of KS32C6200 are reset as well. KIA7045F output terminal of open drain structure is pulled up 5.1kΩ and put out.

5-1-3 SYSTEM MEMORY

System memory consists of 512KB flash memory and 2MB DRAM. Flash memory and DRAM are selected by each CHIP SELECT (/ROMCS, /RASO, /RAS1, /LCAS, /UCAS), and data is accessed half word (16bits) by half word.

5-1-4 SCANNER

5-1-4-1. SUMMARY

This product has CCD(Charge Coupled Device) as an image sensor to receive image input signals and has embodied a shuttle scanner, realizing various scanner control signals and image processing with color image processor CIP1A(U17), which is ASIC for shuttle scan. We are going to look into the principles by explaining the whole data flow in the scanner, block diagram of CIP1A, allocated I/O port and peripheral circuits.

5-1-4-2. CIP1A(U17)

The inside of ASIC is roughly divided into A/D Converter to convert image signals to digital signals, Scanner Controller to provide various CCD driving signals and signals to interface with host controller, and Image Processor for shading compensation, gamma compensation and reasoning of image signals.

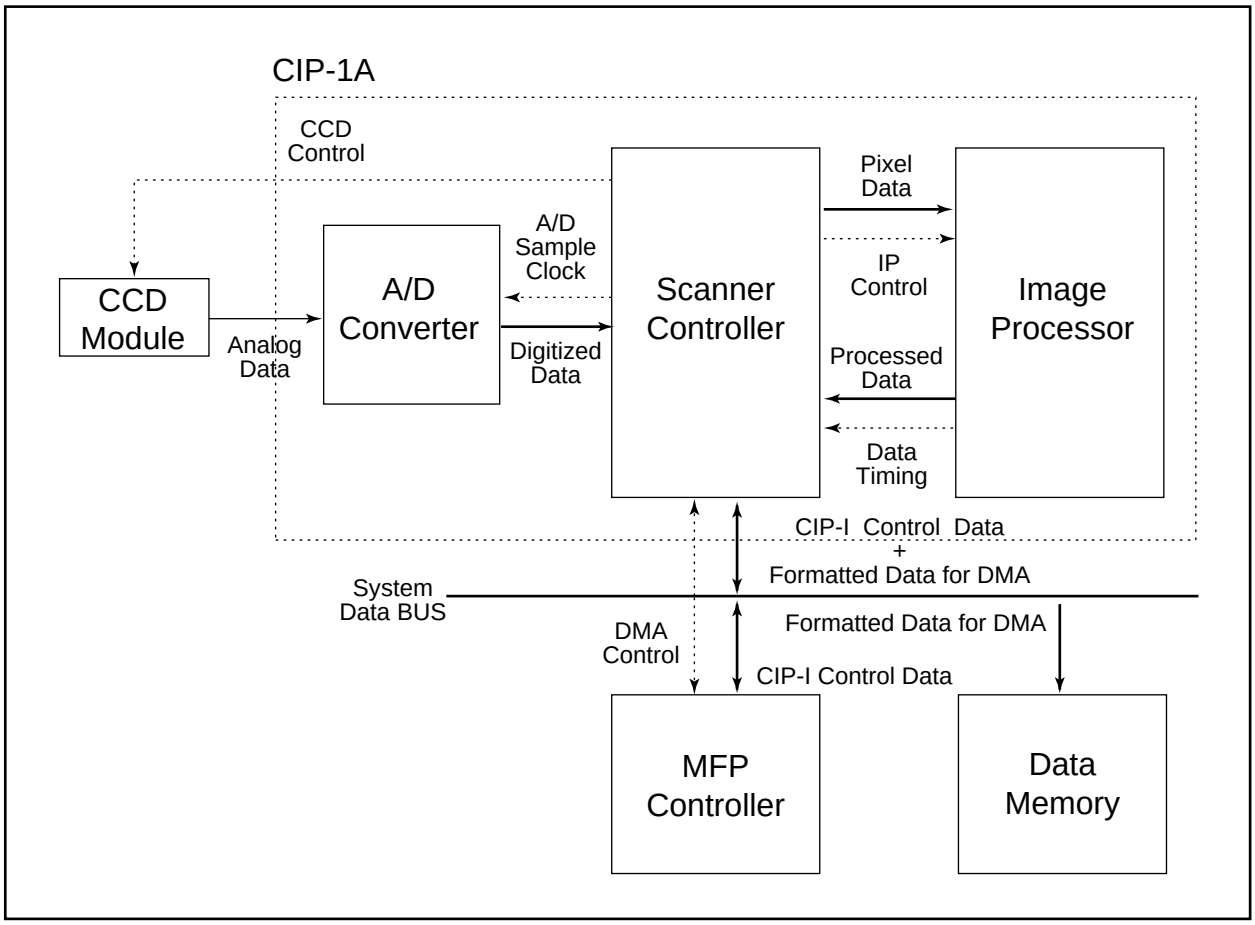


fig.5-1-11 CIP1A Block Diagram

5-1-4-3 CIP1A I/O Port

PIN NAME	PIN NO.	I/O	CIRCUIT NAME	DESCRIPTION	
				H	L
GIP 0	12	I	/START-KEY	-	FAX START / COPY KEY PRESSED
GIP 1	13	I	/CART-KEY	-	CARTRIDGE CHANGE KEY PRESSED
GIP 2	14	I	/POW-KEY	-	POWER(READY) KEY PRESSED
GIP 3	15	I	/STOP-KEY	-	FORM FEED / STOP KEY PRESSED
GIP 4	17	I	THMST	CCD LAMP OVER HEAT	CCD LAMP NORMAL
GIP 5	18	I	/RINGDET	-	RING DETECTION FROM TEL LINE
GIP 6	19	I	/HOOK-OFF	EXTERNAL PHONE HOOK ON	EXTERNAL PHONE HOOK OFF
GIP 7	20	I	HOME-SEN	PRINT HEAD PARKING	PRINT HEAD MOVING
GOP 0	2	O	SHAD-ON	SHADING ENABLE	-
GOP 1	3	O	/SHAD-RST	SHADING REFERENCE CLEAR	-
GOP 2	4	O	POW-LED	POWER (READY) LED ON	POWER(READY) LED OFF
GOP 3	5	O	BUSY-LED	BUSY LED ON	BUSY LED OFF
GOP 4	7	O	SCAN-LED	FAX LED ON	FAX LED OFF
GOP 5	8	O	CML-CTL	FAX OR TEL LINE CONNECTED	EXT. PHONE CONNECTED
GOP 6	9	O	LAMP-5V	CCD MODULE RETURN (+5V)	-
GOP 7	10	O	LAMP-12V	CCD LAMP ON (+11.75V)	-

PIN NAME	PIN NO.	I/O	CIRCUIT NAME	DESCRIPTION	
				H	L
GIOP 0	21	O	THM-CLK	CLOCK SIGNAL TO DIGITAL THERMISTER : 100~140kHz	
GIOP 1	22	I/O	THM-DATA	DATA FROM/TO DIGITAL THERMISTER	
GIOP 2	23	O	PRE-HEAT	PRINT HEAD PREHEATING	-
GIOP 3	24	I	P-EMPTY	NO PAPER	PAPER READY
GIOP 4	25	O	/SPK-CTL	AUDIO AMP. OFF	AUDIO AMP. ON
GIOP 5	26	O	FAX-LED	FAX LED ON	FAX LED OFF
GIOP 6 TUS	27	I	FM-STAT	FLASH MEMORY STATUS	FLASH MEMORY STA READY BUSY
GIOP 7	28	O	CLK-SEL	MCLK/2	MCLK

5-1-4-4. PERIPHERAL CIRCUIT

As to the power of lamp, light source of the scanner module, +11.75V(while scanning) supply and +5V(while waiting) supply are switched by transistor Q7,8,9, and 11.
-Vref is supplied with 1.5V by resistance division through OP-Amp, while +Vref detects the peak by control of analog Mux U2 during white reference label shading. It detects the peak level of image signals by dividing shad-on signal and /Shad-rst signal of U2 into High, setting it as top standard voltage. When you scan some image actually, it will drive shad-on signals into Low to keep the peak level of the capacitor. When you finish scanning, it will drive /Shad-rst into Low and discharge electricity.
Image signals from CCD mounted on scan PBA in the shuttle scanner are delivered through FPC cable, shifting the level as much as 0.75V at Emitter terminal of Tr which is turned on by Level SH signal. These image signals will double by an non-inverting amplifier and finally 1.5V level-shifted image signals will be put in CIP1A.

5-1-5 PRINTER

5-1-5-1. GENERAL

It drives inkjet head to print printing data received from the computer or fax data coming through the line. It roughly consists of head driver, head controller, and the ambient temperature sensor. Fig.6-1-11. Block Diagram of Printer shows the entire structure.

5-1-5-2. HEAD DRIVER (U19, U20, U23, U24)

This part drives and inks inkjet head. Color inkjet head drives 192 nozzles, while mono inkjet head drives 208 nozzles. Mono inkjet head is composed of 16 groups of 13 nozzles. As to the driver that composes each nozzle, 13 row 7-bit driver (U23, U24) selects head address and 16 column 8-bit driver (U19, U20) sends head data. Head driver converts control signals from MFP controller to +11.75V, the level to be able to drive the head, and provides them for the inkjet head.

- Row Driver Circuit (HD7:U23:U24)
  This is a 13-line signal impressed to row drive IC through the output port of MFP controller(/PHGA1 - /PHGA13), used as an address to drive the head in ink cartridge. Pulse period differs according to head driving frequency. In 1200dpi (in case of Head: 12KHz) mode, timing period is 2.6usec (1/1200÷16 groups). The signal put in each driver(window time) is active “L”, with the biggest driver current max 100mA and output voltage +11.75V.

- Column Driver Circuit (HD8:U19,U20)
  It is the fire enable pulse of real head. 16 lines are put out as head driving data lines through the output port of MFP controller (PHOE1 - PHOE16). Enable pulse impressed to the head is put out within window time (Low). It has the function to move it forward or backward by the register in MFP controller. Besides the output signal may differ in accordance with the type of head (mono or color). If there is data, printing image is put out at “H”. If not, it is put out at “L”. In case of Babbage head, pulse width is always 1.3use regardless of the type of the head, with the maximum driving current 400mA and output voltage +11.75V.

5-1-5-3. HEAD CONTROLLER

This part consists of +22V Power Controller to control head driver, Fault Test, Head Detection, Substrate Heating and ambient Temperature Sensor. It checks and controls head driver and ink cartridge.

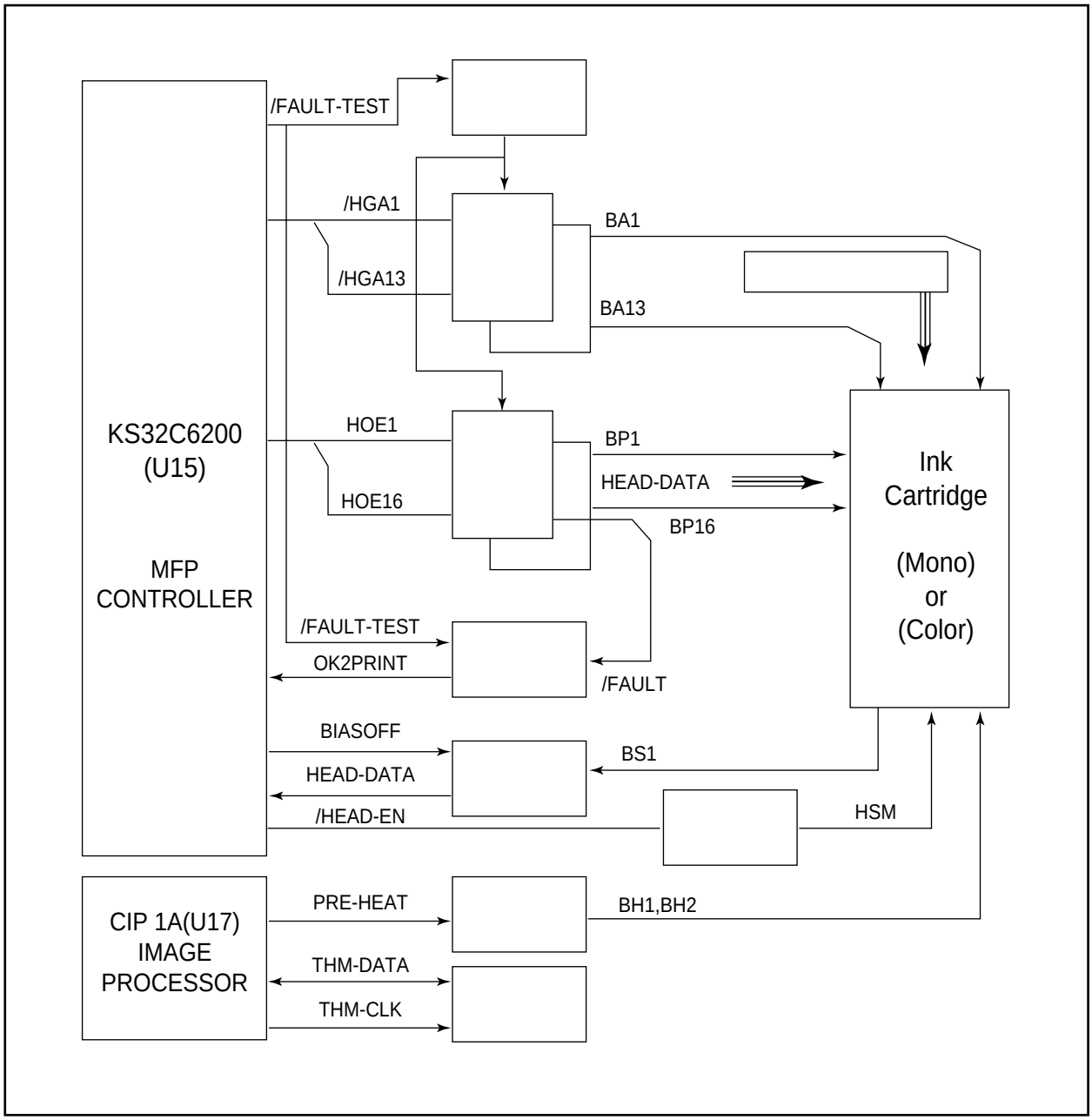


Fig.5-1-12 Block Diagram of Printer

• +22V Power Controller

If you insert power cords, the main board will be supplied with power. /POR signal put out through reset circuit activates MFP controller (K32C6200:U15) and MFP controller puts out external circuit reset signal /RST-OUT. This /RST-OUT signal and Vrefx (+2.5V) divided through +30V are impressed to the input terminal of the comparator, putting out +22V if the output of the comparator is "high" or getting turned off if "low".(in case of /FAULT-TEST signal: HIGH) While +22V is being impressed after /RST-OUT is "High", comparator output gets "low" and turns off +22V driving TR(TIP112) if /FAULT-TEST signal is put out at "low" when you check a short of the head driver and the ink cartridge (head).

• FAULT TEST CIRCUIT

This is a signal to detect whether the head receiving the output of head column driver is in a short. After /FAULT-TEST signal is put out at "low" and +22V is turned "off", "OK2PRINT" signal is entered. The port of KS32C6200(U15) shows normal condition if "H" and a short if "L". If you make FAULT-TEST output "L" to detect fault of the head, +22V gets off. If the head is in a short (LOW), when the level of "/FAULT-TEST" signal goes "L" and final "OK2PRINT" output goes "L". KS32C6200(U15) reads this signal and checks whether the head input receiving the driver output is in a short. Diode cathode is attached to each output transistor collector in the column driver. 8 anode terminals of diode become common as one and put out /FAULT signal, which is pulled up by bias circuit controlled by /FAULT-TEST and shows the condition by OK2PRINT through the comparator.

• SUBSTRATE HEAT CIRCUIT

Mono ink cartridge of Babbage head is 600dpi head that uses pigment ink. It is very sensitive to the temperature in and around the cartridge. In particular, the viscosity of ink affects print quality as it is inversely proportional to temperature by an exponential function. This signal used to compensate it helps you get equal inking quality by warming the ink chamber in the cartridge with aluminum pattern heater before starting to print if the surrounding temperature is lower than standard (below 35°…).(Refer to Timing Chart.) It sends PRE-HEAT signal through I/O port of CIP1A(Color Image Processor:U17) and supplies +11.75V.

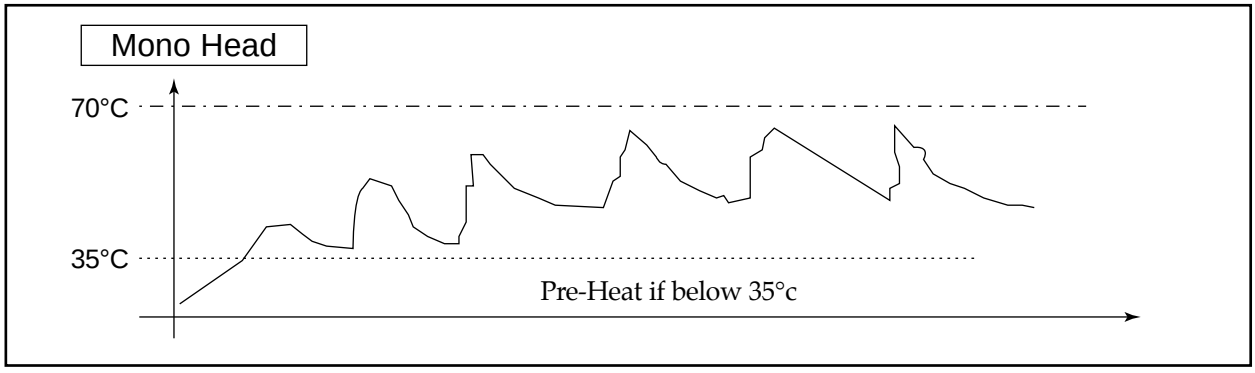


Fig.5-1-13. Temperature around Mono Head

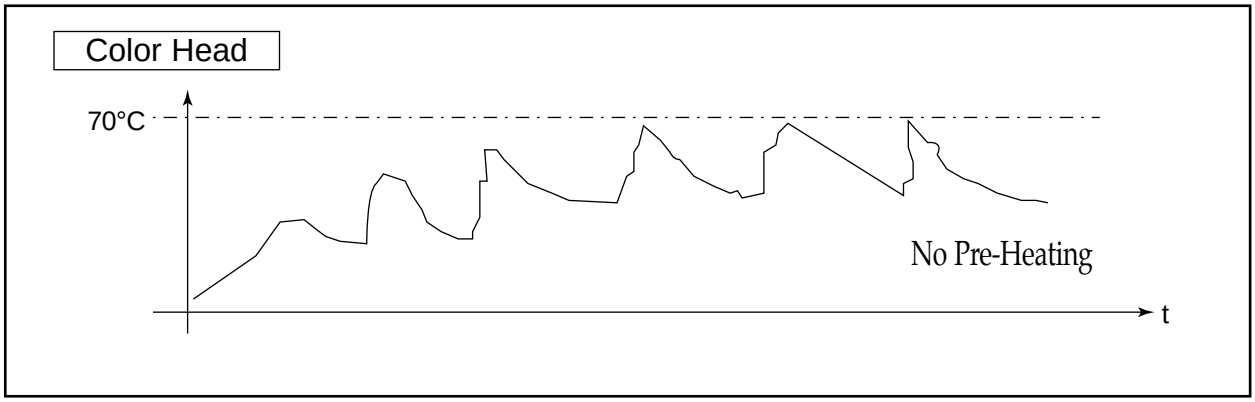


Fig.5-1-14. Temperature around Color Head

- HEAD DETECTION CIRCUIT

  Babbage ink cartridge has 8-bit mask ROM I.D. to check the type of cartridge. In order to detect the head, HSM signal is used as ENABLE signal and BA3 signal as START & STOP BIT, and BA1 and BA2 as clock signal of each bit, and ID signal in the cartridge is put in HEAD-DATA port of KS32C6200 through BS1 line. With each bit controlled, 8bit I.D data is read and STOP bit is put out of BA3(LOAD) port. Then it finishes. If data is mono, it is 07H. If color, 08H.

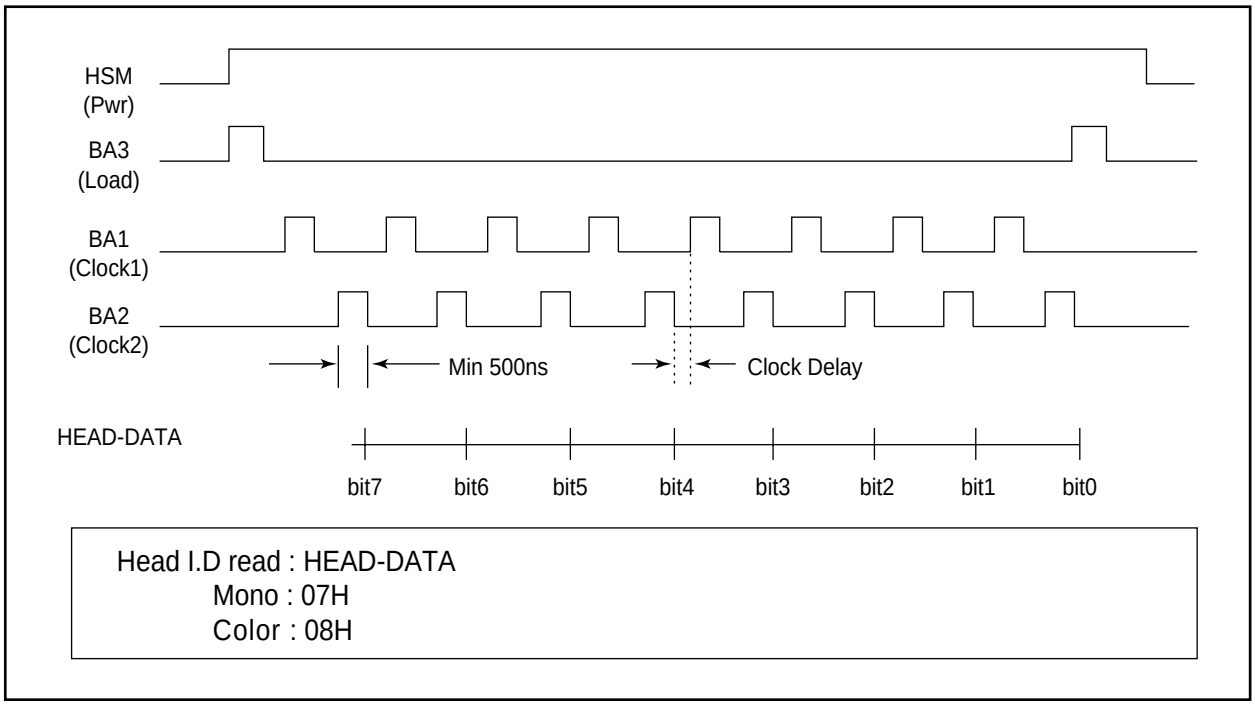


Fig.5-1-15. HEAD DETECTION TIMING DIAGRAM

• SURROUNDING TEMPERATURE SENSOR
DS1621S(DALLAS SEMI.) is applied to read the temperature around ink cartridge. It is used to get optimum inking quality by keeping the viscosity of ink in the cartridge in the specified lerel. The way to read temperature is similar to EEPROM, controlled by THM-CLK, THM-DATA LINE. Digital thermometer to check the surrounding temperature is assembled along with home sensor in the frame of assembly CR. After each line is printed, it reads the surrounding temperature and heats substrate heater in the ink cartridge during the accelerating time of CR to keep the viscosity of ink in the specified lerel.

5-1-5-4. HEAD DRIVING TIMING

Control signal from MFP controller (KS32C6200:U15) enters the head driver and it becomes the level to be able to drive the head nozzles (+11.75V). It is depicted in the following diagram.

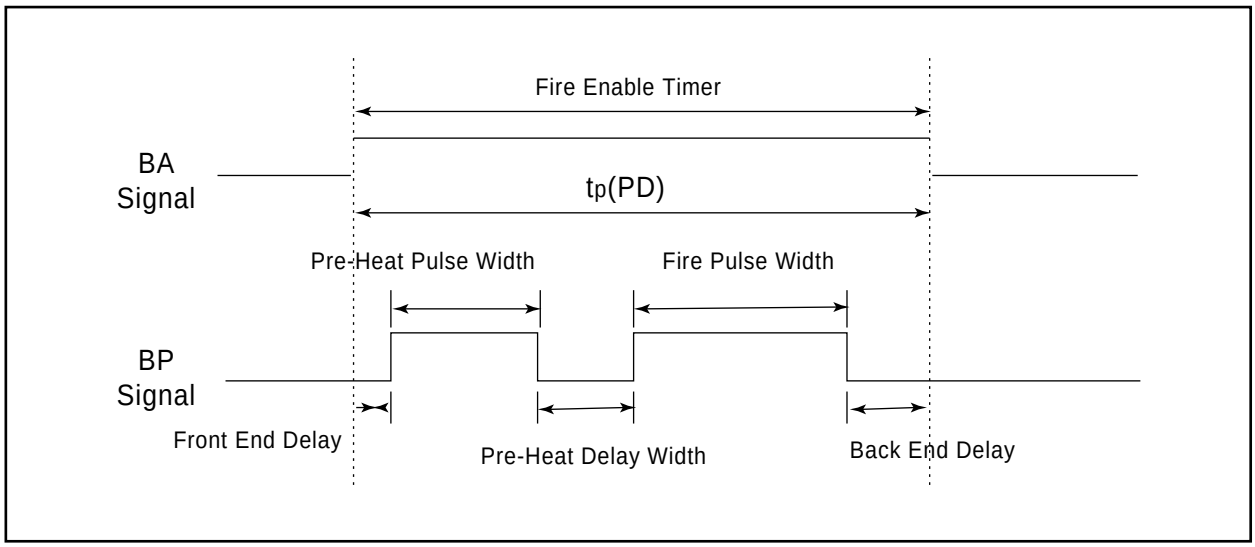


Fig.5-1-16. HEAD DRIVING TIMING DIAGRAM

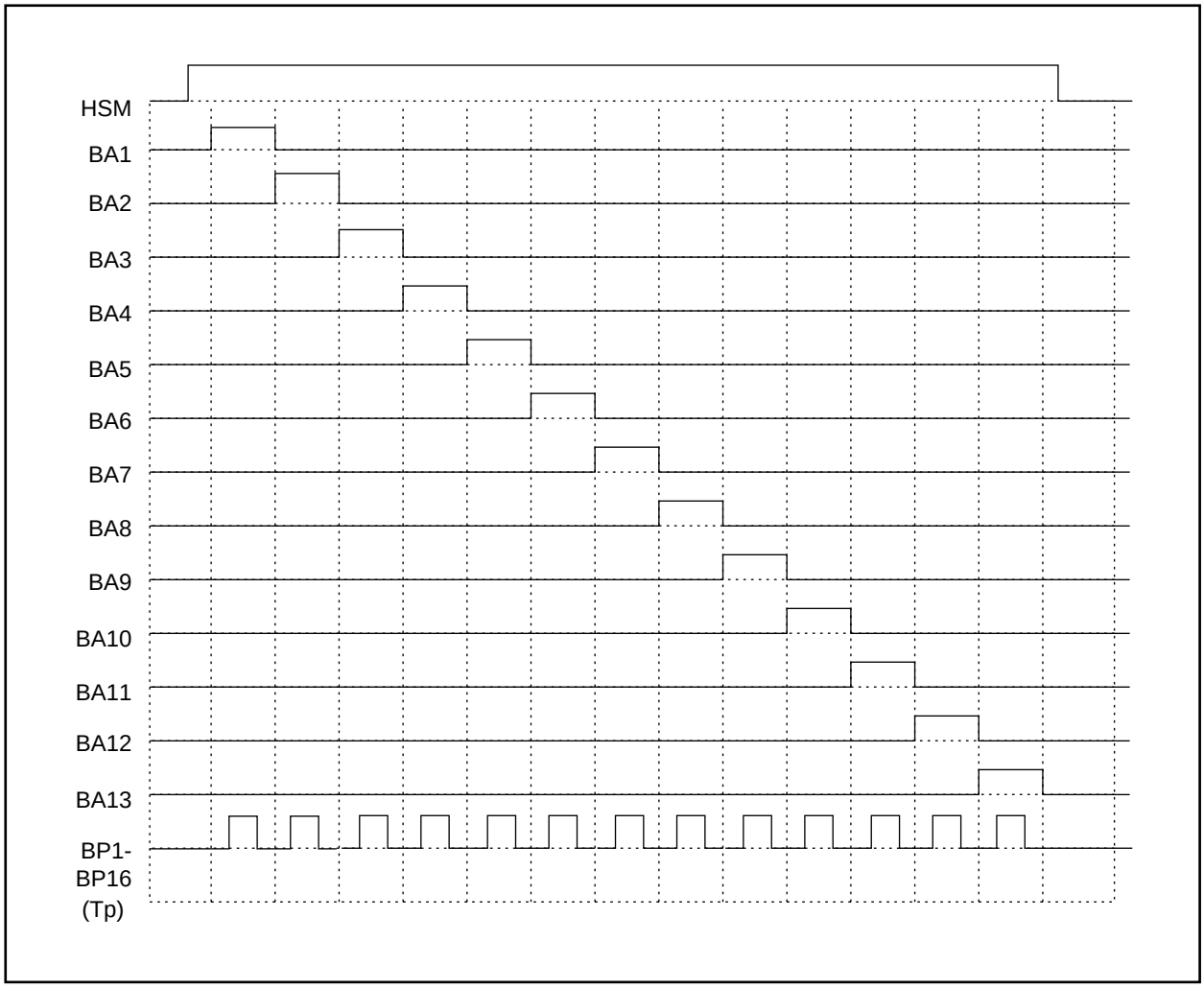


Fig.5-1-17. TIMING DIAGRAM FOR EACH NOZZLE

• PIN ARRAY OF MONO INK CARTRIDGE
There are 208 heater chips in mono ink cartridge.

Column Data(BPx)	Address (BA1_ ~ BA13_)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
1	1	21	15	9	3	23	17	11	5	25	19	13	7
2	20	14	8	2	22	16	10	4	24	18	12	6	26
3	27	47	41	35	29	49	43	37	31	52	45	39	33
4	46	40	34	28	49	42	36	30	50	44	38	32	52
5	53	73	67	61	55	75	69	63	57	77	71	65	59
6	72	66	60	54	74	68	62	56	76	70	64	58	78
7	79	99	93	87	81	101	95	89	83	103	97	91	85
8	98	92	86	80	100	94	88	82	102	96	90	84	104
9	105	125	119	113	107	127	121	115	109	129	123	117	111
10	124	118	112	106	126	120	114	108	128	122	116	110	130
11	131	151	145	139	133	153	147	141	135	155	149	143	137
12	150	144	138	132	152	146	140	134	154	148	142	136	156
13	157	177	171	165	159	179	173	167	161	181	175	169	163
14	176	170	164	158	178	172	166	160	180	174	168	162	182
15	183	203	197	191	185	205	199	193	187	207	201	195	189
16	202	196	190	184	204	198	192	186	206	200	194	188	208

• PIN ARRAY OF COLOR INK CARTRIDGE
There are 192 heater chips in mono ink cartridge. One cartridge has 64 Cyan, 64 Magenta, 64 Yellow heaters and (64 x 3 colors) 192 nozzles.

Column Data(BPx)	Address (BA1_ ~ BA13_)												
	1	2	3	4	5	6	7	8	9	10	11	12	13
1	-	19	13	7	11	21	15	9	3	23	17	11	5
2	15	12	6	-	20	14	8	2	22	16	10	4	24
3	25	45	39	33	27	47	41	35	29	49	43	37	31
4	44	38	32	26	46	40	34	28	48	42	36	30	50
5	51	71	65	59	53	73	67	61	55	75	69	63	57
6	70	64	58	52	72	66	60	54	74	68	62	56	76
7	77	97	91	85	79	99	93	87	81	101	95	89	83
8	96	90	84	78	98	92	86	80	100	94	88	82	102
9	103	123	117	111	105	125	119	113	107	127	121	115	109
10	122	166	110	104	124	118	112	106	126	120	114	108	128
11	129	149	143	137	131	151	145	139	133	153	147	141	135
12	148	142	136	130	150	144	138	132	152	146	140	134	154
13	155	175	169	163	157	177	171	165	159	179	173	167	161
14	174	168	162	156	176	170	164	158	178	172	166	160	180
15	181	-	-	189	183	-	-	191	185	-	-	-	187
16	-	-	188	182	-	-	190	184	-	-	192	186	-

5-1-6 MOTOR DRIVER

5-1-6-1. GENERAL

SMARTJET use 2 stepper motors, i.e. CR(Cartridge Return) motor and LF(Line Feed) motor.
CR motor moves left and right all-in-one carriage of inkjet head and shuttle scanner. It helps the printer print accurately on the paper and the scanner read image data accurately. LF motor is driven to feed and eject paper for printing and to feed and eject documents to read for scanning. Bi-polar CR motor is controlled half step with maximum 24ips(inch/sec), while LF motor half step and quarter step at maximum 6ips.

5-1-6-2. CR(CARRIAGE RETURN) MOTOR DRIVING CIRCUIT

CR motor moves the carriage left and right when ink cartridge prints something on paper or shuttle scanner reads image data.
- Motor Type : Stepper motor, bi-polar
- Driving Voltage : +30V
- Winding Resistance : 6Ω ± 10%
- Driving IC : TEA3718DP X 2

CR_REF	CRIA1 (CRIB1)	CRIA0 (CRIB0)	CURRENT(mA)	OPERATION	REMARK
H	L	L	490	Mono LQ is being driven	
L	L	L	670	Color draft is being driven	
L	L	L	670	Mono draft is being driven	
X	H	H	0	No current	

As shown in the above table, current in each mode is adjusted by voltage of driver(U25, U26) CRVREF input. If the output of CR_REF signal controlled by MFP controller(U15) is “low”, TR(Q12) will be turned off and the voltage put in to CRVREF of driver (U25, U26) with +5V divided will go up (+4.5V). It becomes the standard of the driver, resulting in high current. If CR_REF output is “high”, TR(Q12) will be turned on and the voltage put in to CRVREF will go down (+3.0V), resulting in low current in the motor.

5-1-6-3. LF(Line Feed) Motor Driving Circuit

LF motor is driven to feed and eject documents and paper.
- Motor Type: stepper motor, bi-polar
- Driving Voltage : +30V
- Winding Resistance : 12Ω ± 10%
- Driving IC : PBL3717A X 2

LFIA1	LFIA0	CURRENT(mA)	OPERATION	REMARK
L	L	670	When feeding document/paper	
L	H	400	When ejecting document/paper	
X	H	0	No current	

5-1-7 FAX TRANSCEIVER

5-1-7-1. GENERAL

This circuit processes transmission signals of modem and between LIU and modem.
This circuit is added only to SMARTJET.

5-1-7-2. MODEM (U21)

KS16116 is a single chip fax modem. It has functions of DTMF detection and DTMF signal production as well as functions of modem. TX OUT is transmission output port and RX IN is received data input port. /POR signal controlled by MFP controller (U15:KS32C6200) can initialize modem(/RST_OUT) without turning off the system.
D0 - D7 are 8-bit data buses. RS0 - RS4 signals to select the register in modem decide the mode. /CS is a signal to select modem chips. /RD and /WR signals control READ and WRITE respectively. /IRQ is a signal for modem interrupt.
Transmission speed of KS16116 is up to 9600bps.

5-1-7-3. TRANSMITTER

This circuit processes transmission output, analog signal of modem(KS16116).
Output signal in each mode goes out of modem (TXOUT:U21-44). After D/A signals are smoothed and filtered through active filter (U5-6,7:R270,R277,C130), they are buffered under OP AMP(U5-2, 1:R291, C139, R298, C150) and put out to LINE through LIU board.

5-1-7-4. RECEIVER

In the receiving mode, analog signals coming in through LIU board are amplified at OP AMP(U6-2, R293, C141), and then transmitted to input terminal of modem (RXIN:U21-45) through smoothing filter (U6-6, 7:R273, R274, C126).

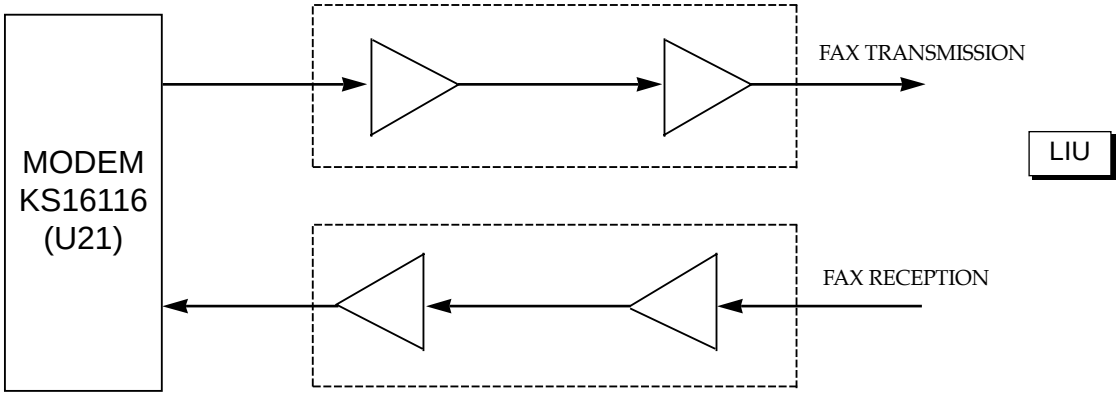
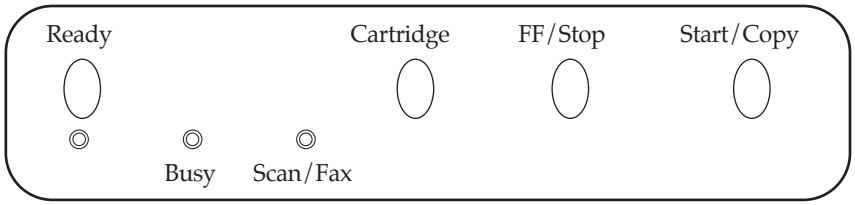


Fig.5-1-18. FAX TRANSCEIVER

5-1-8 OTHERS

OPERATOR PANEL DESCRIPTION	
KEY & LED	**DESCRIPTION**
Ready	- When power cord is inserted, the system is turned on and initialized. It does not operate but waits for Ready key to be pressed. - If you press the Ready key, the nearby Ready LED will be turned on and the device will be initialized with the system in standby mode. - If the Ready LED is off, the system does not operate though it is on. - Running Print Out Test Pattern **Step 1**. While Ready LED is off, press 'Ready' key for 0.5 - 1 second with 'FF/Stop key pressed in advance. **Step 2**. Pattern is printed so that you can check the nozzles of the head.
Cartridge	- This key is used to exchange print head cartridge in the toggle mode or to insert it for the first time. - If color head is mounted when fax documents are to be printed,it does not print but Ready LED and operating LED blink. - Press this key for about 3 sec or more to put in a new ink cartridge.
FF/Stop	- When 'no paper' is displayed while printing, place paper, and it is automatically fed. - After you finish printing, press this key to eject paper already fed. - Press this key to stop fax communication. - Press this key to stop scanning.
Start / Copy	- If you press this key when hook-on and documents will be fed, scanned and stored in memory. - If you press this key when hook-on but there is no document, LED meaning 'Feed document' will blink for about 3 sec. (Refer to LED status.) - If you press this key when hook-off, it will operate to receive or transmit the document you fed.
LED status Ready Busy Scan/Fax ● ○ ○ ● ○ ● ● ● ○ ● ● ● ● ○ ■ ● ◎ ■ ● ○ ◎ ◎ ◎ ○ ◎ ◎ □ ● ◎ □	● → green LED ON ○→ OFF ◎ → green LED blinks ■ → red LED ON □ → red LED blinks System Standby Mode. You can start new operation only in this mode. (TEL mode) System Standby Mode. You can start new operation only in this mode. (FAX mode) Data is being received from host.(Printing) other operation Data is being uploaded to host. (Scanning) Fax transmitting/reception. (Faxing) Transmitting/receiving error Paper jam, no paper No document, next document, document jam Cartridge is being exchanged. No cartridge Ink low



5-2 LIU PBA

5-2-1 SUMMARY

LIU(Line Interface Unit) circuit added only to SMARTJET is controlled by the main circuit.
It monitors telephone line and helps interface between the system and the telephone line. It uses 1-LIU(STI9510) to control the whole LIU, MODEM/LINE INTERFACE, RING SIGNAL DETECTOR, DIALER, LINE CURRENT DETECTOR, and SERIAL INTERFACE.

5-2-2 MODEM/LINE INTERFACE

This is the path through which transmitted and received data of modem is put in and out.

- CML1 Relay: It divides telephone line into external telephone and fax.
- U3-3 TIT(Transformer Input from Transformer): This single ended input receives image signals from modem through transformer T2 and transmits them on telephone line.
- U3-40 ROT(Receive Output Transformer): This output transformer receives signals on telephone line and delivers them to modem through transformer T1. It has AC impedance of 10Kohm or over.
- AC impedance: Normal operation range of U3(STI9510) is from 15mA to 100mA. DC characteristics depend on the voltage of U3-37 LI(Line Input) terminal and the voltage of resistance R48 between U3-37 LI(Line Input) terminal and U3-39 LS terminal.

5-2-3 RING SIGNAL DETECTOR

- U3-28(MO) terminals are ring signal output terminals. Q4 and Q5 put out ring signals and drive Piezzo, but SmartJet2000, SMARTJET does not use Piezzo. It has only the functions related to ring detection such as driving the photocoupler of U4 and delivering ring signals to MFP controller (U15:KS32C6200) of the main.

5-2-4 DIALER

5-2-4-1. MF DIAL

- Default mode it is set in DP. You can change it to MF mode by control of MFP controller.
- MF signal can be measured at (tone level of low group: typical - 14dBm) U3-4 MFO(DTMF Generator Output). The signal is adjustable by R40, R41 and C29. The adjusted signal enters U3-9 MFI (DTMF Amplifier Input) and is amplified to be transmitted on telephone line.
- U3-39 LS(Line Current Sense Input) terminals show the final signals transmitted to telephone line.

5-2-4-2. DP DIAL

- If U3-2(DMS) is made Vcc by R42, it is set at 33:67 DP signal. If it is made Vss by R43, it is set at DP signal. This product is set at DP signal.
- DP signal is made by U3-27(DPn) terminals. This signal turns on/off Q1. The signal made at that time turns on/off Q2, which interrupts DC current on telephone line and puts out pulse signal on telephone line.
- U3-35 CS terminals : It makes Make Resistance by shorting telephone line with Vss during Make period of DP dial.

5-2-5 Line Current Detector

- When CML1 relay connects telephone line, U3(STI9510) of LIU board and MFP controller of the main board (U15:KS32C6200) start communication through UART. U3 of LIU board sends signal that includes information of line current value, whenever it receives orders or data from U15 of the main board.

5-2-6 Serial Interface

- This part does serial communication with MFP controller of the main board (MAIN PBA:U15) that controls the whole system. It controls LIU by giving and taking all control orders and line status.
- U3-11 RXD : Schmitt Trigger input, Receiving terminal..
- U3-29 TXD : Open Drain output terminal
- Standard UART communication
  - Baud Rate : 9600bps
  - Start, Stop bit : 1bit each
  - Data bits : 8 bit
  - Parity bit : none

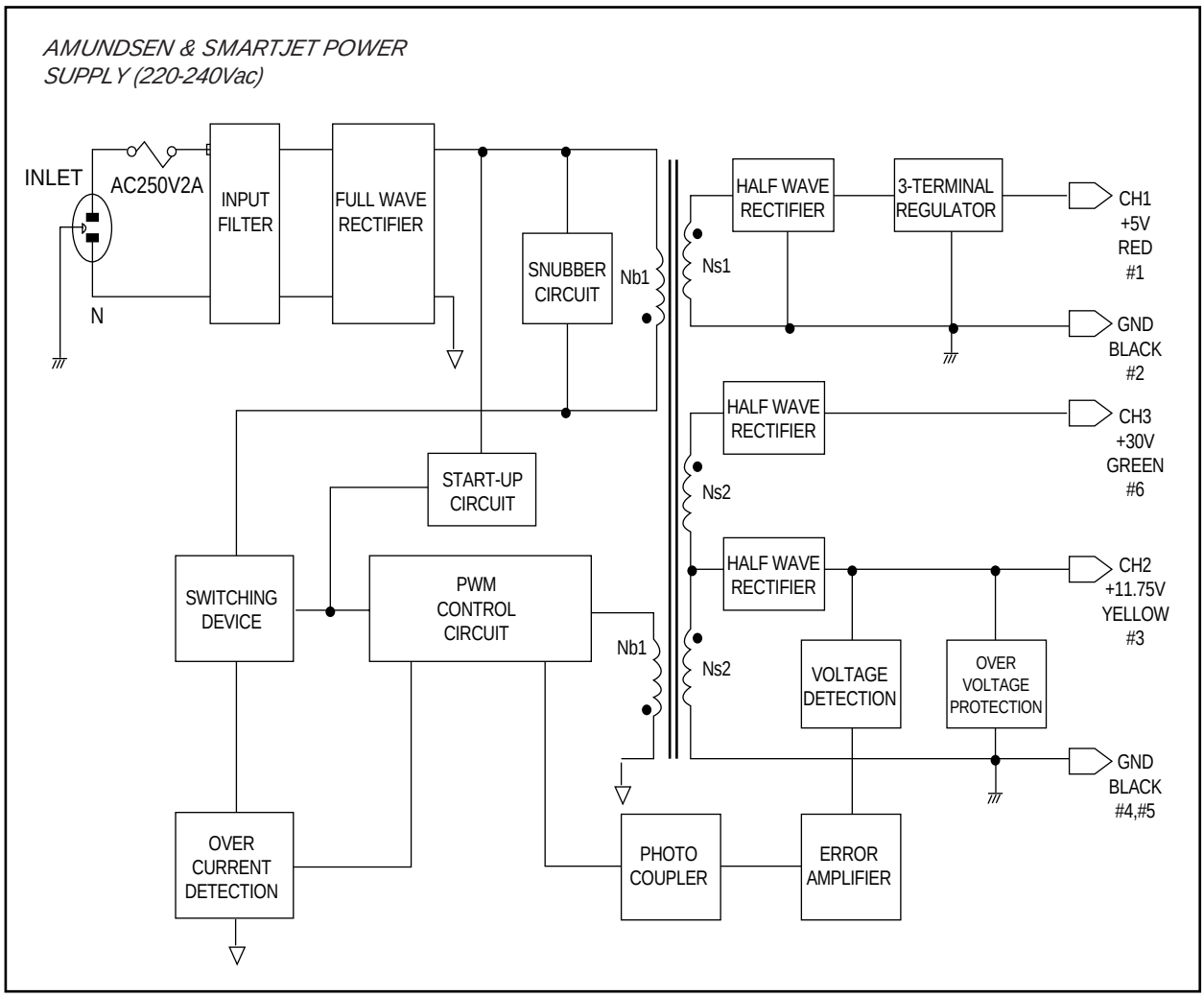
5-2-7 MAJOR FUNCTIONS OF PARTS

1) U3 : STI9510
   - Key part of LIU board. Speech Network, Dialer, Ringer and UART are built in one IC package.
2) U5 : PC817
   - Photo coupler. It enables UART of U3(STI9510) to receive control signal or dialing information from MFP controller of the main board (U15).
   - Insulation between prinary and secondany circuit part.
3) U6 : PC817
   - Photo coupler. It enables UART(U3-29:TXD) of U3(STI9510) to deliver telephone line status or response signal about control signal or dialing information from LIU to MFP controller of the main board (U15).
   - Insulation between prinary and secondany circuit part.
4) U4 : PC817
   - It senses and delivers ring signal to the main board.
   - Insulation between prinary and secondany circuit part.
5) U2 : PC814
   - It senses hook-off (Line connection) of the external telephone and delivers it to the main board.
   - Insulation between prinary and secondany circuit part.
6) BD1 : BRIDGE DIODE
   - Regardless of the polarity of DC power from telephone line, the voltage put out on Pin.1 has always + polarity against pin Pin.2. So DC loop forms always in the same direction regardless of the polarity of the telephone line.
7) T2,T3 : TRANSFORMER
   - It delivers signals from the telephone line to modem or signals from modem to the telephone line.
   - Insulation between prinary and secondany circuit part.

5-3 SMPS

5-3-1 BLOCK DIAGRAM OF POWER CIRCUIT

Refer to the following block diagram.



5-3-2. SPECIFICATIONS OF POWER CIRCUIT

5-3-2-1. INPUT CONDITIONS

1) INPUT RATED VOLTAGE	: AC220 - 240V FREE VOLTAGE
2) INPUT VOLTAGE TURNING RANGE	: AC 85 - 270V
3) RATED FREQUENCY	: 50 - 60 Hz
4) FREQUENCY RANGE	: 47 - 63 Hz
5) INPUT CURRENT	: 0.5Arms

5-3-2-2. OUTPUT CONDITIONS

NO	ITEM	CH1	CH2	CH3
1	RATED OUTPUT VOLTAGE	+5.0V	+11.75V	+30V
2	RATED OUTPUT CURRENT	0.5A	0.8A	0.5A
3	MAXIMUM LOAD CURRENT	0.8A	1.3A	0.76A
4	LOAD CHANGE RANGE	0.1 ~ 0.8A	0.03 ~ 1.3A	0.05 ~ 0.76A

5-3-3. POWER CIRCUIT

5-3-3-1 INPUT

This product is equipped with a three-wire grounding-type power inlet. Insulation is class 1. When a power device part breaks down or some trouble in this circuit causes a short, excess current runs through a fuse and blows it to protect power devices and the system from excess current and prevent a fire.
Input filter of power input terminal removes line noise flown in from outside and reduces noise which is made in power circuit and logic part and conducted or radiated through power cords.
AC input voltage is rectified by bridge diode of full wave rectifier, is converted to DC voltage by smoothing circuit, and switches the power device of this voltage.
As switching is in RCC(Ringing Choke Converter) mode, switching frequency changes from about 50KHz to 100KHz.
PWM(Pulse Width Modulation) Control Circuit adjusts the duty of the switching device by sensing the change of output voltage, and protects this product from excess current by receiving signals from excess current detecting circuit.

5-3-3-2 DRIVING CIRCUIT (START-UP CIRCUIT)

If you insert a power plug into AC outlet, full-wave rectified DC output voltage is generated at input electrolysis condenser and supplied to the gate of a switching device through driving resistance. This voltage drives the switching device. Once it is driven, it continues to switch via PWM control circuit with power supplied by auxiliary coil Nb.

5-3-3-3 SWITCHING CIRCUIT (VOLTAGE STABILIZATION)

11.75V of 2nd voltage is detected by voltage detector and feeds back through photo coupler to 1st PWM Control Circuit signals compared by error amplifier.
PWM Control Circuit controls the gate of power transistor according to the feedback voltage so as to supply load with stable output voltage.

5-3-3-4 OCP CIRCUIT (OVER CURRENT PROTECTIVE CIRCUIT)

If a short in secondary load terminal or a short inside power device causes excess current, power consumption increases. Then it increases current of power transistor.
The current of power transistor increases linearly when it is on. This current is detected by sensing resistance and is impressed to excess voltage protective circuit of PWM control circuit through RC integration circuit where over current protection is built in.
If this voltage becomes bigger than Vbe of excess current control transistor, the potential of power transistor gate falls immediately and it stops driving power transistor to protect it from excess current.

5-3-3-5 OVP CIRCUIT (OVER VOLTAGE PROTECTIVE CIRCUIT)

If the main power of power device 11.75V increases abnormally, this excess voltage is detected by OVP detecting circuit and 11.75V output terminal shifts to a state similar to
a short.
If 11.75V output terminal shorts, over current runs on over current detecting terminal and OCP circuit operates to prevent a fire in power device.

5-3-3-6 +5V OUTPUT TERMINAL

Square wave voltage generated by Ns1 produces DC voltage rectified and smoothed by half-wave rectifier. This voltage put in to a three-wire regulator generates stable DC power of +5V.

5-3-3-7 +30V OUTPUT TERMINAL

Square wave voltage generated by Ns2 is rectified and smoothed by half-wave rectifier and supplies load with output voltage without separate regulation.

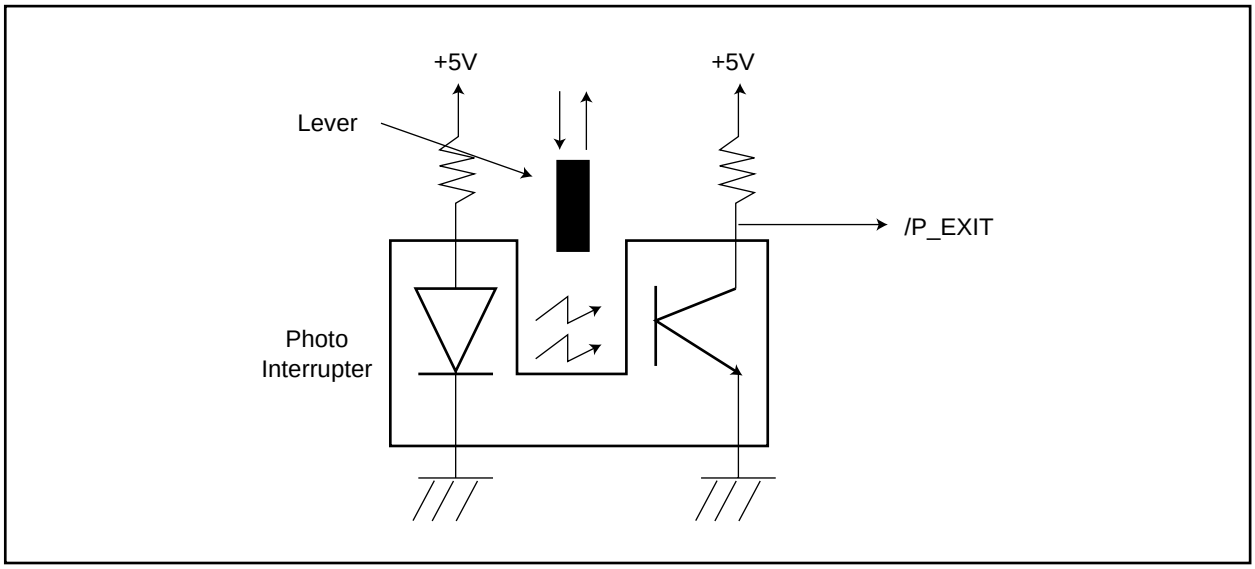
5-3-3-8 +11.75V OUTPUT TERMINAL

Square wave voltage generated by Ns3 is rectified and smoothed by half-wave rectifier, and then detected by voltage detector. Signals compared by error amplifier are fed back to primary PWM control circuit through photo coupler.
PWM control circuit controls the voltage of power transistor gate driver according to the voltage to supply load with stable output voltage.

5-4. OTHERS

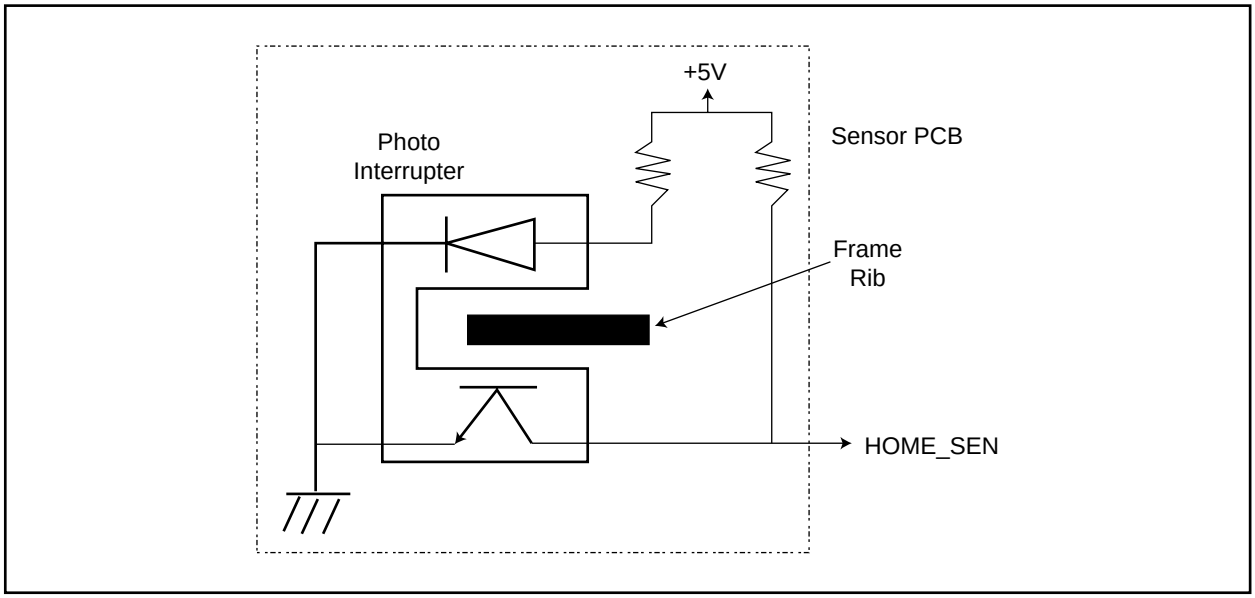
5-4-1. PAPER SENSING CIRCUIT

This circuit senses whether there is paper or not, using photo interrupter. If there is no paper, the lever will cover its sensor and output "/P_EXIT" will become "High". If there is paper, the lever will be lifted and output "/P_EXIT" will become "Low".



5-4-2. HOME SENSING CIRCUIT

This circuit senses whether carriage is at home or not. This function is carried out when the system is turned on or when the head is capped. Photo interrupter is used as a home detecting sensor, attached to the back of the carriage. When the carriage moves left and right, output is "high" if the frame rib covers the center of the sensor and "low" if it is out of home.



5-4-3 TEMP IC DRIVING CIRCUIT

TEMP IC(DC1621S, Thermometer) mounted on the sensor card on the back of the carriage is used to read the temperature around ink cartridge.
This IC converts the temperature around IC package into digital and sends the temperature data to serial to make it sense the temperature around the head. It senses temperature so that the temperature of the head can be the optimum when you print something. The above IC sends data serially using signal lines(THM_DATA, THM_CLK).

6. REPAIR

6-1. SCANNER

PROBLEM	ITEMS TO BE CHECKED	HOW TO SOLVE
Black data when you scan or copy	Does the lamp operate normally while shuttle module operates?	- Check module lamp. - Check FPC of the main board & module. (J1-1<=> CON2-1: LAMP ON) - Check the path of the main board. (U17[#10]->R185[1K]-Q8->R262->Q7-> CON2[#1]) - Replace module. - Replace the main board.
Bright image	Check if white ref. panel is too dirty.	- Clean white ref. panel. - Replace white ref. panel.
Dark image	1. Is the lamp supplied with appropriate power when the scanner operates? 2. Does the output of module satisfy specifications? 3. Does (-)Vref value satisfy specifications?	1. Check the lamp-on level of module and the main board.(+11.75V/ + 5V) (J1-1<=> CON2-1: LAMP ON) 2. Check video signal output of module and main board. 3. Check (-) Vref value.
Lamp blinks	Check power of the lamp. (12V serial connection)	Replace FPC-SCAN connecting power of the lamp. Replace the scanner.
Cannot turn on the lamp	Check the power of the lamp. (12V serial connection) Check scan connector on circuit board.	Check the power of the lamp. Replace the scanner. Connect the connector.
Overlapped or omitted image when you scan or copy	Check if screws of CR fixing part are loose. Check if LF connector is properly connected.	Screw down Connect LF connector.
Black in whole when you scan or copy	Check the scanner of the main board. Check scanner cable. Check the scanner.	Replace the main board. Replace FPC-SCAN. Replace the scanner.
White lines when you scan/copy.	Check if there is foreign substances on LABEL(P)-REFERENCE.	Wipe LABEL(P)-REFERENCE.

6-2. SENSOR

PROBLEM	ITEMS TO BE CHECKED	HOW TO SOLVE
Black data when you scan/copy	Does the carriage operate normally and go to the initial place, when you turn it on with the carriage placed in the middle?	- Check connection between the sensor board of the carriage and the main and check if FPC cable is damaged. - Check if FPC is connected properly with CN1 of the sensor board. - Check if the signal of the sensor is delivered well to CN1-#2 of the sensor board. - Replace FPC cable. - Replace the sensor board.
Can't print/copy with No Paper displayed	- Is No Paper cleared when you press No Paper sensor on ASF? - Does the level of CON7-#2 turn from H to L when you press No Paper sensor on ASF?	- Check connection with CON7 of the main board. - Replace No Paper sensor on ASF.

6-3. PAPER FEED

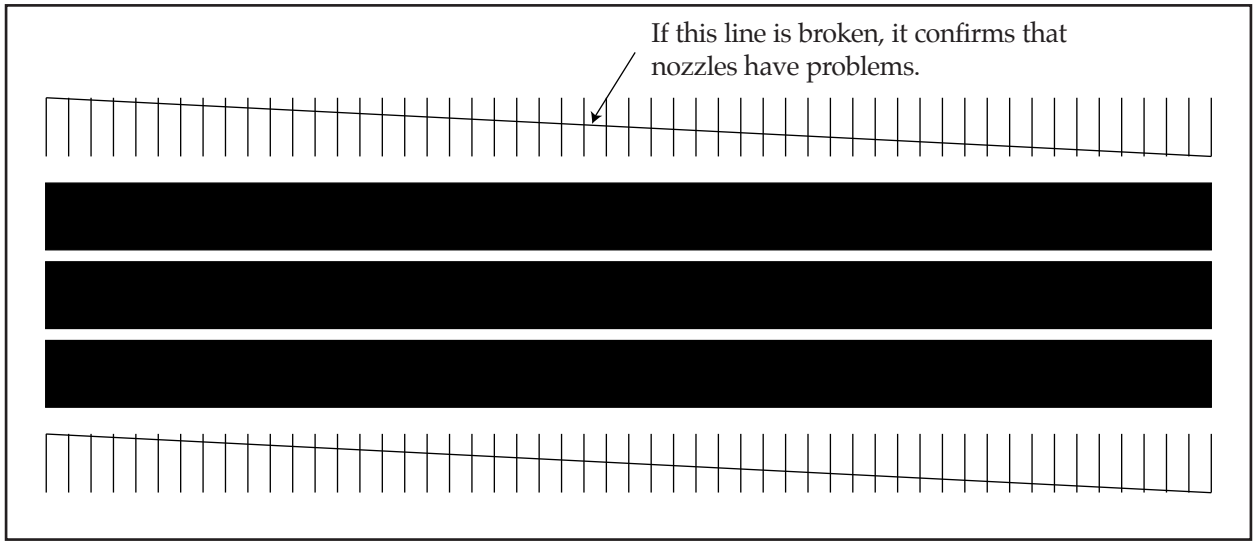
PROBLEM	ITEMS TO BE CHECKED	HOW TO SOLVE
Automatic sheet feeder feeds paper but paper is not supplied to the engine.	- Check if actuator feed operates perfectly. - Check if paper sensing optical sensor is normal.	- Replace actuator feed, spring, or other defective parts. - Replace the paper sensing optical sensor.
Automatic sheet feeder cannot feed paper.	- Check if stopper clutch operates perfectly. - Check if too much paper has been supplied. - Check if pickup roller rubber of the automatic sheet feeder is worn out.	- Replace stopper clutch assembly. - Supply appropriate amount of paper(100 sheets of normal copying paper). - Replace pickup roller rubber.
Can't feed envelopes	- Check the location of the envelope guide of automatic sheet feeder.	- Open the envelope guide when you feed envelopes.
Tilted Printing	- Check if paper guide of the automatic sheet feeder is adjusted to the size of paper.	- Adjust paper guide to the size of paper.

6-4. PRINTING QUALITY

6-4-1 White lines on letters or graphics.

■ Cause

If nozzles in print head has a probkem, white lines are marked on the print.
'Self-diagnostic printing' will let you know if nozzles have problems.

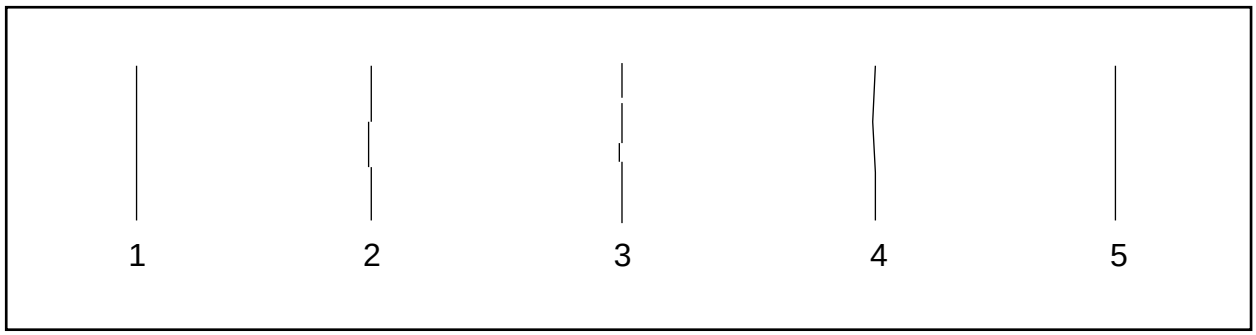


■ Solution

1) Run 'print control panel' to "clean cartridge" and check if nozzles have been blocked.
2) Wipe with soft cloth the contact surfaces of ink cartridge and carriage, and check if nozzles have been cleaned properly.
3) Separate ink cartridge from carriage and combine them. Repeat it about 5 to 6 times and check if connection is proper.
4) Replace ink cartridge and check whether there's a problem with thehead.
5) Check if head cable is inserted well into the main circuit board and then check if nozzles have problems.
6) Check if head cable is broken or torn and then check if nozzles have problems.
7) Replace the main circuit board with a new one and check if nozzles have problems.

6-4-2 When perpendicular lines are printed crookedly

- Cause : Perpendicular lines are printed crookedly if you do not "align perpendicular lines" on the printer.
- Solution
  1) Run print control panel to "align perpendicular lines", and
  2) Select the best one of the above samples and enter the number.
  3) This function to align perpendicular lines is available both for mono and color cartridges.



6-4-3 When ink spreads on transparent film

- Cause : You selected a wrong medium on the driver or you did not use transparent film designated for inkjet.
- Solution
  1) Use only transparent film designated for inkjet when you print on transparent film by an inkjet printer.
  2) Run "Windows driver" and select "transparent film" as the kind of paper if you print on Windows.

6-5. Setting a PC BIOS to invoke ECP Mode

SMARTJET use ECP mode of Nibble mode when SMARTJET are transferring scanned data to a PC through a centronics cable. Depending upon a parallel port connection (P1284) mode, scan speed of our unit can vary in great deal, and sometimes unexpected problems like SIO chip detection problem might come up due to a mode difference between a host PC and our unit.
When a PC is booting, a PC BIOS initializes the SIO chip of PC in parallel port and sets the mode of parallel port. But when parallel port is set in a nibble mode, a SIO chip in some certain PCs prohibit PC software(the twain driver) from changing the mode of parallel port. In order to enhance the speed of parallel port and to solve some parallel port connection problems it is strongly recommended that the service man who has encounterde these problems must set the parallel port connection(P1284) mode to a ECP mode in a PC BIOS.

6-6. Defective Operation

PROBLEM	ITEMS TO BE CHECKED	HOW TO SOLVE
"Ready" LED won't light up.	1. No Power? 2. VCC(+5V) ≥ +4.5V? 3. U15-130(/POR) is HIGH? (+4.5V or over) 4. U15-153(/RST_OUT) is HIGH? (+4V or over)	1. Check power(SMPS). 1) Cord connection 2) Check each power channel. (+5V, +11.75V, +30V) 2. Check power. 3. Check the circuit around U16. 4. Check data bus of U15. Exchange the main PBA.
LF motor does not operate.	1. Check control signal of U15-141 - 145. 2. Check driving output and input signal of U27 and U28.	1. Replace the main PBA if control signal is not generated though the other functions of the system are normal. 2. Replace U27 and U28 if driving output is defective though input signal is normal.
CR motor does not operate.	1. Check control signal of U15-31 - 36. 2. Check driving output and input signal of U25 and U26.	1. Replace the main PBA if control signal is not generated though the other functions of the system are normal. 2. Replace U25 and U26 if driving output is defective though input signal is normal.
Paper Jam	Check sheet feeder and ejector.	Get rid of jammed paper.
Document Jam	Check manual document feeder.	Remove jammed documents and insert it again.
No Paper	1. No paper? 2. U17-24 is HIGH? (+4V or over)	1. Feed paper. 2. If high, replace the paper empty sensor. If low, replace the main PBA.
No Document	1. No document? 2. U15-125 is HIGH? (+4V or over)	1. Insert documents. 2. If high, check SEN1 and the surrounding circuit. If low, replace the main PBA.
No Cartridge	1. Check if ink cartridge is mounted. 2. Check contacted part of the head. 3. Check head checking circuit and driver.: Check U15-8,9,10,128,154,156, U17-23 control signals and head data.	1. Mount ink cartridge. 2. Clean it. 3. Replace the main PBA.
Ink low	Check the amount of ink.	Replace ink cartridge. After replacing it, press 'ink replacement' key for over 3sec to inform the system of new ink.

PROBLEM		ITEMS TO BE CHECKED	HOW TO SOLVE
Can't copy		1. Refer to 'problems of scanner.' 2. Poor quality of printed image : Print test pattern and check if nozzles have fallen out. 3. Can't print.: Check U17-34, 36 signals.(LOW ACTIVE)	1. Refer to 'problems of scanner.' 2. 1) Check contact between ink cartridge and the head.: Clean it. 2) Check print control signals of U15-1~10, U15-158 - 160, U15-12~19, and U15-21~28. Check input and output signals of U19,20,23, and 24. Replace the main PBA. 3. Replace the main PBA.
Can't PRINT		1. Check centronics cable connection. 2. Is 'Standby' LED of the system on? 3. Check how print driver has been installed. 4. Check I/F part of parallel port. 1) Check the initial state of print control signal of CON8.: No.1, 10 ~14, 31, 32, 36 2) Check input and output signal of U14. 3) Check input and output signals of U15-43~51 and U15-53~61. 5. Refer to 2 and 3 of 6-4 'PRINGTING QUALITY'.	1. Connect it correctly. 2. Press 'standby' key to keep the standby mode. 3. Install the print driver again and reboot the system. 4. Replace the main PBA. 5. Refer to 2 and 3 of 6-4 'PRINGTING QUALITY'.
Defective Transmission / Reception	In case PC controls	1. Check CON3(main PBA), main LIU harness, and P1(LIU PBA). 2. 1) Is external telephone hooked off? 2) Output of U2-4(LIU PBA) is LOW? 3. Check HOOK-OFF. (Line connection): U17-8(/CML1) is HIGH? 4. Check the signals of U15-122, 123. 5. Check transmission path: Check output of U21-44(main PBA) and input of U3-3(LIU PBA). 6. Check reception path: Check output of U3-40(LIU PBA) and input of U21-45(main PBA).	1. Replace defective parts. 2. 1) Hook on external telephone correctly. 2) If low, replace LIU PBA. 3. If low, replace main PBA. If it is not hooked off though it is normal, replace LIU PBA. 4. If the signals of U15-122(LIU_TXD) are abnormal, replace main PBA. If the signals of U15-123(LIU_RXD) are abnormal, replace LIU PBA. 5. If it is abnormal, replace main PBA. 6. If the output of U3-40(LIU PBA) is not confirmed, replace LIU PBA. If the output of U3-40(LIU PBA) is confirmed but the input of U21-45(main PBA) is not confirmed, check the circuit around U6(main PBA).

PROBLEM		ITEMS TO BE CHECKED	HOW TO SOLVE
	In case you use external tele-phones	1. Check CON3(main PBA), main LIU harness, and P1(LIU PBA). 2. Output of U2-4(LIU PBA) is HIGH? (+4V or over) 3. Refer to 3,4,5 and 6 of 'Defective Transmission/Reception' in 'In case PC controls'.	1. Replace defective parts. 2. If high, check the surrounding circuit and replace LIU PBA. 3. Refer to 3,4,5 and 6 of 'Defective Transmission/Reception' in 'In case PC controls'.
Automatic Reception Failure		1. Can you check ring? Check ring pat-tern of U17-18(main PBA). 2. Refer to 'Defective Transmission/ Reception'.	1. If not, replace LIU PBA. 2. Refer to 'Defective Transmission/ Reception'.
MF dial is possible but not DP dial.		1. Check the part around R2 and Q6 of LIU PBA. 2. Check connection of R43 of LIU PBA.	1. Replace LIU PBA. 2. Replace LIU PBA.

Note) 1) Refer to 5. 'CIRCUIT' for the details about the signals mentioned above.
2) Unplug power cord and insert it again to cancel all operations (all operations being performed, error, etc.) and initialize the system.

6-7. Other Problems

PROBLEM	ITEMS TO BE CHECKED	HOW TO SOLVE
'Ink Low' continues to be displayed or warning voice sounds though ink has been replaced.	- Check if you reset 'Ink Low Counter' when you replaced ink.	- Reset Ink Low Counter by pressing 'ink replacement' button for more than 3 seconds when you replace ink using the button. - Reset Ink Low Counter by pressing 'new cartridge replacement' button when you replace ink using PC.
Printed color is extremely different from the color on the screen of PC.	- Check by self diagnostic printing if specific color ink is used up.	- Replace color ink cartridge.
PC cannot check the status of the printer.	- Check if device driver has not been installed or incorrectly installed.	- Add Device=C: \ Myjet \ Mjtsr.exe to Config.sys file and reboot the computer. - Optimize PC memory by running "Memmaker".
Windows goes in error and the com-puter gets down after a diskette is installed.	- Check 'virtual memory' of control panel in the basic program group.	- Press the 386 expansion icon of control panel to change 'virtual memory' from temporary to permanent.

7. Exploded View

7-1. Exploded View

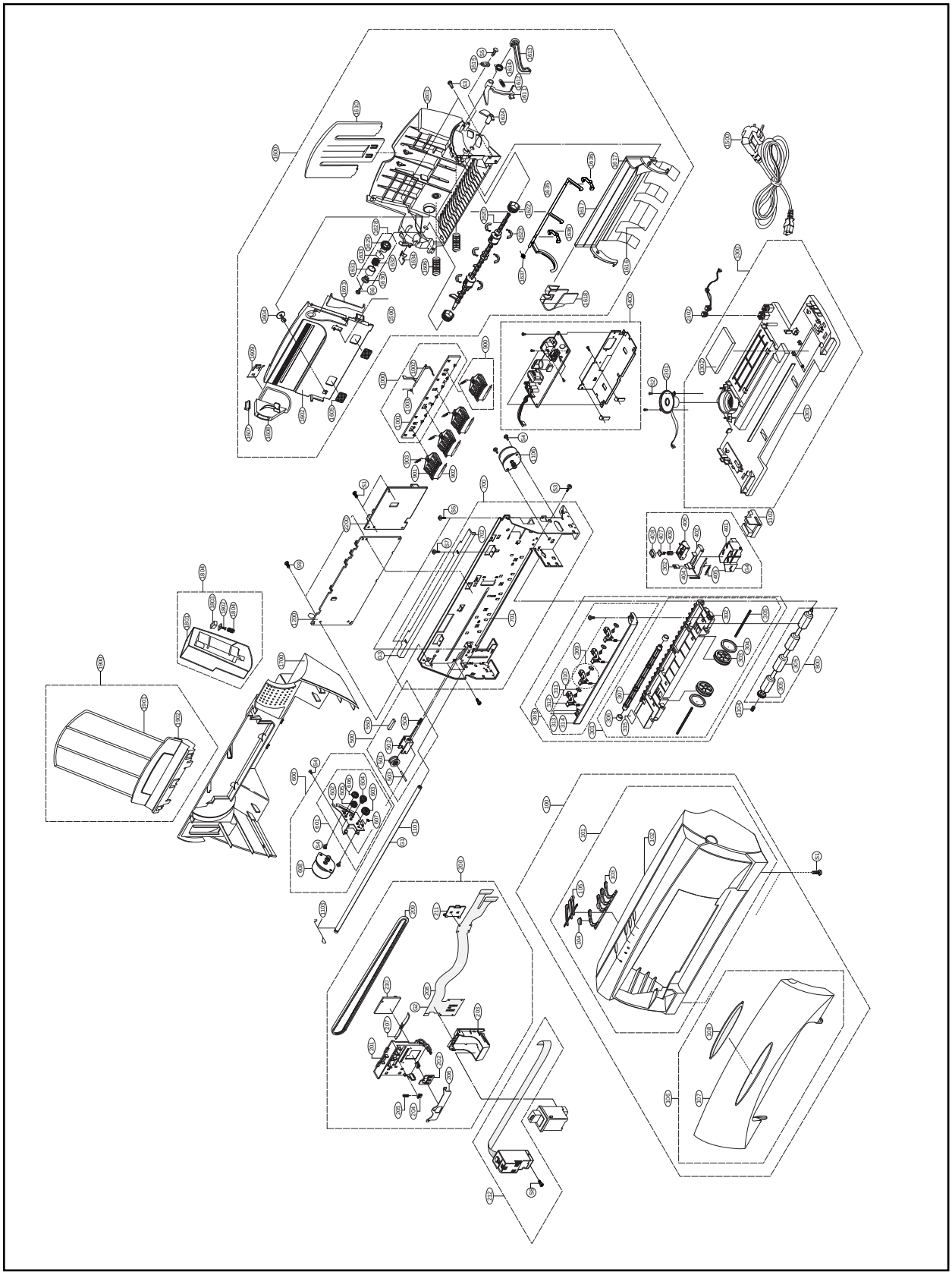
Location	Code	Part Name & Specifications	Availability of Materials	Minimum Q'ty
100	JB97-00979C	MEA HOU-COVER FRONT	O	1
101	JB75-10940B	MEC-COVER FRONT	O	1
102	JB72-40952C	PMO-COVER FRONT : HIPS VE-1870U C7425	O	1
103	JB72-40956A	PMO-BUTTON KEY : ABS HF-0660I C7425	O	1
104	JB72-40970A	PMO-CAP BUTTON : ABS HF-0660I 75064	O	1
105	JB72-40971A	PMO-LENS LED : PMMA IF855 CLEAR	O	1
106	JB75-10943C	MEC-COVER-DOOR : MJ-850S	O	1
107	JB72-40953G	PMO-COVER DOOR : HIPS VE-1870U C7425	X	1
108	JB72-40957A	PMO-WINDOW DOOR : ABS 558C 88682	X	1
200	JB96-00912A	MLA-UNIT CARRIAGE : MJ-850S	O	1
201	JB72-40972A	FRAME-CR : PC+GF20% VO BLK	X	1
202	JB73-10901A	RUBBER-CONTACT : SILICON RUBBER	X	1
203	JB72-40243A	PMO-CRADDLE HEAD A : ABS HB BLUE	O	1
204	JB72-40244A	PMO-LATCH HEAD : ABS HB BLK	X	1
205	6107-000015	SPRING-CS ; PI 0.74, D2.48, L1	X	1
206	JB70-10907A	IPR-DEFLECTOR GUIDE ; SUS304 0.2T	X	1
207	JB72-60114A	PMO-DAMPER CR : NYLON 66	X	1
208	JB39-40501A	CBF-HARNESS FPC : POLYMIDE	O	1
209	6602-001036	BELT-TIMING GEAR : RUBBER (CR+GLASS)	O	1
210	JB41-10504A	PCB-SUB : PHOTO SENSOR	X	1
211	JB72-40935A	PMO-HOLDER FPC : PMO NAT	X	1
212	JB96-00915A	ELA UNIT-SCANNER : MJ-850S	O	1
300	JB97-00937A	MEA-FRAME BASE ; MJ-850S	O	1
301	JB75-10932A	MEC-FRAME BASE : MJ-850S/MJ-860X	X	1
302	JB72-40930A	PMO-FRAME BASE : ABS HB BLK	X	1
303	JB72-40934A	PMO-PULLEY EXIT : POM	X	1
304	JB73-40902A	PMO-RUBBER PULLEY : EPDM	X	1
305	JB61-70906A	SPRING-RING : SUS 304 WPB(0.5DIA)	X	1
306	JB73-20901A	REX-FEED EXIT ; CR RUBBER BLK	O	1
307	JB72-40932A	PMO-ROLLER EXIT : ABS HB BLK	X	1
308	JB75-10933A	MEC-HOLDE EXIT : MJ-850S	X	1
309	JB75-10958A	MEC-LEVER WHEEL : MJ-850S	O	1
310	JB70-10101A	IPR-WHEEL STAR : SUS 304 T0.15 DIA7.0	X	1
311	JB72-40237A	PMO-HOLDER WHEEL : POM	X	1
312	JB72-40933A	PMO-LEVER EXIT : ABS HB BLK	X	1
313	JB61-70907A	SPRING-CS(EXIT) : SUS 304 WPB(0.2DIA)	O	1
314	JB72-40278C	PMO-HOLDER EXIT : ABS+GF20% HB BLK	X	1
315	JB68-10914A	LABEL(P)-REFERENCE	O	1
400	JB97-00944A	MEA-FRAME HOME : MJ-705G/705A	O	1
401	JB72-40937A	PMO-FRAME HOME : ABS V0 BLK	X	1
402	JB72-40938A	PMO-GUIDE WIPER : ABS HB BLK	X	1
403	JB73-10902A	RPR-RUBBER WIPE HEAD : TEXIN480A	X	1
404	JB72-40939A	PMO-LEVER WIPER : ABS HB BLK	X	1
405	JB61-70908A	SPRING-EX(WIPER) : SUS 304 WPB(0.2DIA)	X	1
406	JB72-40940A	PMO-GUIDE CAP : POM BLK	X	1
407	JB72-40248A	PMO-HOLDER CAP :POM BLK	X	1
408	JB73-10903A	RPR-RUBBER CAP HEAD : SANTOPRENE -45	X	1
409	6107-000014	SPRING-CS(CAP) : SUS 304 WPB(0.55DIA)	X	1
500	JB97-00242D	MEA-PULLEY IDELE : MJ-705G/MJ-705A	O	1
501	JB66-40203A	GEAR-IDLE : POM BLK	X	1
502	JB72-40283A	PMO-HOLDER PULLEY : ABS HB BLK	X	1
503	JB70-40100A	ICT-SHAFT PULLEY : SUM 24L(NI) DIA3.0	X	1
504	6107-001004	SPRING-CS(PULLEY) : SUS 304 WPB (0.8DIA)	X	1
550	JB72-41121A	STOPPER-PULLEY:ABS HB BLK	O	1

Location	Code	Part Name & Specifications	Availability of Materials	Minimum Q'ty
600	JB97-00945A	MEA-BRKT LF1 : MJ-705G/MJ-705A	O	1
601	JB75-10934A	MEC-BRKT LF : MJ-705G/MJ-705A	O	1
602	JB70-10902A	BRKT-LF MOTOR : SECC T1.2	X	1
603	JB66-40002A	GEAR-LF IDLE1 : POM	X	1
604	JB66-40003A	GEAR-LF IDLE2 : POM	X	1
605	JB66-40902A	GEAR-LF IDLE3 : POM	X	1
606	JB66-40903A	GEAR-LF IDLE4 : POM	X	1
607	JB66-10001A	BEARING-FEED L : POM	X	1
608	3101-001079	MOTOR-STEP(LF) : NMB MOTOR	O	1
700	JB75-10938A	MEC-FRAME MAIN : MJ-850S/MJ-860X	O	1
701	JB70-10908A	IPR-FRAME MAIN : SECC T1.2	X	1
702	JB70-10909A	IPR-RAIL CR 2 : SECC T0.8	X	1
703	JB70-10910A	IPR-SUPPORT BASE : SECC T1.2	X	1
800	JB97-00939A	MEA-ROLLER FEED : MJ-705G/MJ-705A	O	1
801	JB75-10926A	MEC-ROLLER FEED : SUM 24L+EPDM 70deg	X	1
802	JB66-40001A	GEAR-FEED : POM	X	1
900	JB97-00938A	MEA-FRICTION ROLLER : MJ-705G/MJ-705A	O	1
901	JB72-40914A	PMO-HOLDER FRICTION : PBT BLK	X	1
902	JB70-40902A	ICT-ROLLER FRICTION : SUS 24L(NI) (DIA4.0)	X	1
903	JB61-70902A	SPRING-FRICTION : SUS 304 WPB(0.4DIA)	X	1
1000	JB97-00240A	MEA-ROLLER SUB : COLUMBUS	O	1
1001	JB72-40232A	PMO-HOLDER ROLLER : ABS V0 BLK	X	1
1002	JB72-40236A	PMO-ACTUATOR FEED : ABS HB BLK	X	1
1003	JB61-70004A	SPRING-ACTUATOR : SUS 304 WPB(0.2DIA)	X	1
1101	JB70-40903A	ICT-SHAFT CR 2 : SUM 24L NI	O	1
1102	JB72-40959A	PMO-FRAME SUPPORT : ABS HB BLK	O	1
1103	JB61-70007A	SPRING-CR SHAFT : SUS 304 WPB (0.7DIA)	O	1
1104	6107-000003	SPRING-ES(DAMP) : SUS 304 WPB (0.3DIA)	O	1
1105	JB66-10002A	BEARING-FEED, R : POM BLK	O	1
1106	3101-001096	MOTOR STEP(CR) : NMB MOTOR	O	1
1200	JB92-00914A	PBA MAIN-MAIN : MJ-850S	O	1
1300	JB75-10939A	MEC-COVER BOTTOM : MJ-850S/MJ-860X	O	1
1301	JB72-40955A	PMO-COVER BOTTOM : HIPS VE-187OU C7425	X	1
1302	JB74-10901A	MPR-FELT INK : PULP	X	1
1303	JB61-40001A	FOOT-PRINTER : CR RUBBER	X	1
1400	JB44-10502A	SMPS-FV : FREE VOLT	O	1
1500	955 001407AAAA	CBF-POWER CORD, 2000MM	O	1
1600	JB96-00913A	ELA UNIT-ASF : MJ-850S/MJ-860X	O	1
1601	JB72-40915A	PMO-FRAME ASF : HIPS V0	X	1
1602	JB72-40917A	PMO-PLATE KNOCK UP : ABS HB	X	1
1603	JB72-41027A	PMO-GUIDE ENVELOPE : HIPS HB	X	1
1604	JB72-40950A	PMO-LEVER DAMPER : POM+MINARAL 5%	X	1
1605	829 492001AA	MMP-PAD : CORK	X	1
1606	JB61-70923A	SPRING-KNOCK UP : SUS 304 WPB(135g)	X	1
1607	JB70-10918A	IPR-PLATE TENSION :	X	1
1608	JB72-41026A	PMO-GUIDE PAPER SIDE : ABS HB 75064	O	1
1609	JB70-10906A	IPR-GUIDE LATCH : SUS 0.3T	X	1
1610	JB72-40218A	PMO-GUIDE EXTENSION A : HIPS HB	O	1
1611	JB72-40923A	PMO-FINGER ASF : ACETAL(NA)	X	1

Location	Code	Part Name & Specifications	Availability of Materials	Minimum Q'ty
1613	JB72-40924A	PMO-LEVER FINGER : ACETAL (NA)	X	1
1614	JB61-70903A	SPRING-FINGER LEVER : SUS 304 WPB	X	1
1615	JB70-10903A	IPR-BRACKET FINGER : SECC T0.8	X	1
1616	JB72-41029A	PMO-PLATE MANUAL : PC GE 1415109	O	1
1617	JB72-41025A	PMO-GUIDE MANUAL (R) : PC GE 1415109	O	1
1618	JB72-41028A	PMO-GUIDE MANUAL (L) : PC GE 1415109	O	1
1619	JB72-30901A	PMO-GUIDE FILM :	X	1
1620	JB72-40921A	PMO-SHAFT PICK UP : PC	X	1
1621	JB72-41024A	PMO-GUIDE FINGER : ACETAL (NA)	X	1
1622	JB73-40901A	RUBBER-PICK UP : EPDM	X	1
1623	JB72-40925A	PMO-ROLLER IDLE : ACETAL (NA)	X	1
1624	JB72-40926A	PMO-CAM PICK UP : ACETAL (NA)	X	1
1625	JB72-40958A	PMO-ACTUATOR PE : POM BLK	X	1
1626	JB39-40504A	CBF HARNESS-PES : MJ-850S	X	1
1627	0604-001050	PHOTO-INTERUPTER : TR	X	1
1628	JB75-10931A	MEA-CLUCH : MJ-705G/MJ-705A	O	1
1629	JB66-40901A	GEAR-CLUCH : ACETAL (NA)	X	1
1630	JB72-40927A	HUB-CLUCH : ACETAL (NA)	X	1
1631	JB72-40928A	PMO-RATCHET-CLUCH : ACETAL (NA)	X	1
1632	JB61-70904A	SPRING-CLUCH : SUS 304 WPB(DIA0.8)	X	1
1633	JB61-70905A	SPRING-RATCHET : SUS 304 WPB(0.5DIA)	X	1
1634	JB39-40929A	PMO-STOPER CLUTCH : ACETAL (NA)	O	1
1635	JB72-41155A	LEVER-RETURN : ABS+GF20	X	1
1636	JB72-41156A	BUSHING-LEVER : POM	X	1
1637	JB61-70935A	SPRING-RETURN LEVER : STS304 WPB ßj0.6	X	1
1700	JB72-40954A	PMO-COVER REAR : HIPS VE-1870U C7425	O	1
1800	JB97-00925A	MEA-GARAGE : MJ-705G/MJ-705A	O	1
1801	JB72-40947A	PMO-CASE GARAGE : HIPS VE-1870U C7425	X	1
1802	JB72-40248A	PMO-HOLDER CAP : ACETAL BLK	X	1
1803	JB73-10903A	RUBBER-CAP HEAD ; SANTOPRENE -45	X	1
1804	6107-000014	SPRING-CAP : SUS 304 WBP (0.5DIA)	X	1
1900	JB75-10944B	MEC-GUIDE BANNER : MJ-705G/MJ-705A	O	1
1901	JB72-60125A	EXIT-TRAY A : HIPS HR-1360 C7425	X	1
1902	JB72-40984A	PMO-GUIDE BANNER : HIPS HR-1360 C7425	X	1
2000	JB75-10986B	MEC-CARRIER SHEET	O	1
2101	JB46-10524	S/W-DOS UTILITY : MJ-850S/MJ-860X	O	1
2102	JB46-10525	S/W-WIN DRIVE 1 : MJ-850S/MJ-860X	O	1
2103	JB46-10526	S/W-WIN DRIVE 2 : MJ-805S/MJ-860X	O	1
2104	JB46-10527	S/W-SCAN DRIVE 1 : MJ-850S/MJ-860X	O	1
2105	JB46-10528	S/W-SCAN DRIVE 2 : MJ-850S/MJ-860X	O	1
2106	JB46-10529	UTILITY-CD ROM TITLE : MJ-850S/MJ-860X	O	1
2107	JB68-60917A	MANUAL-USERS DRIVE : MJ-850S/MJ-860X	O	1
2108	JB68-60920A	MANUAL-USERS SCAN : MJ-850S/MJ-860X	O	1
2109	JB68-60921A	MANUAL-USER PRINTER : MJ-850S/MJ-860X	O	1
2110	JB59-10504A	UNIT-CARTRIDGE (C) : BABBAGE	O	1
2111	JB59-10507A	UNIT-CARTRIDGE (M) : BABBAGE	O	1
2112	JB39-40301H	CBF-HARNESS	O	1
S1	6003-000179	SCREW-TAPTITE : PWH, +S, M3, L6	O	1
S2	6002-000101	SCREW-TAPPING : BH +, S, M3, L10(BLK)	O	1
S3	6003-001016	SCREW-TAPTITE : BH +, S, M3, L5.5	O	1
S4	6003-000126	SCREW-TAPTITE : BH +, S, M3, L6	O	1
S5	6002-000175	SCREW-TAPPING : PWH, +, 2, M3, L8	O	1
S6	6003-000193	SCREW-TAPTITE : PWH, +, B, M2.5, L6	O	1
S7	6003-000190	SCREW-TAPTITE : PWH, +, S, M3, L6	O	1
S8	6002-000143	SCREW-TAPPING : PH, +, 2, M2.5, L6	O	1
S9	6003-001062	SCREW-TAPTITE : PH +, S, M3, L12, WHT	O	1

Location	Code	Part Name & Specifications	Availability of Materials	Minimum Q'ty
G1	0205-001002	GREASE : NYOGEL 744	O	1
G2	0205-001007	GREASE : NYOGEL 759G	O	1
G3	961 171005AB	GREASE : CRS841	O	1

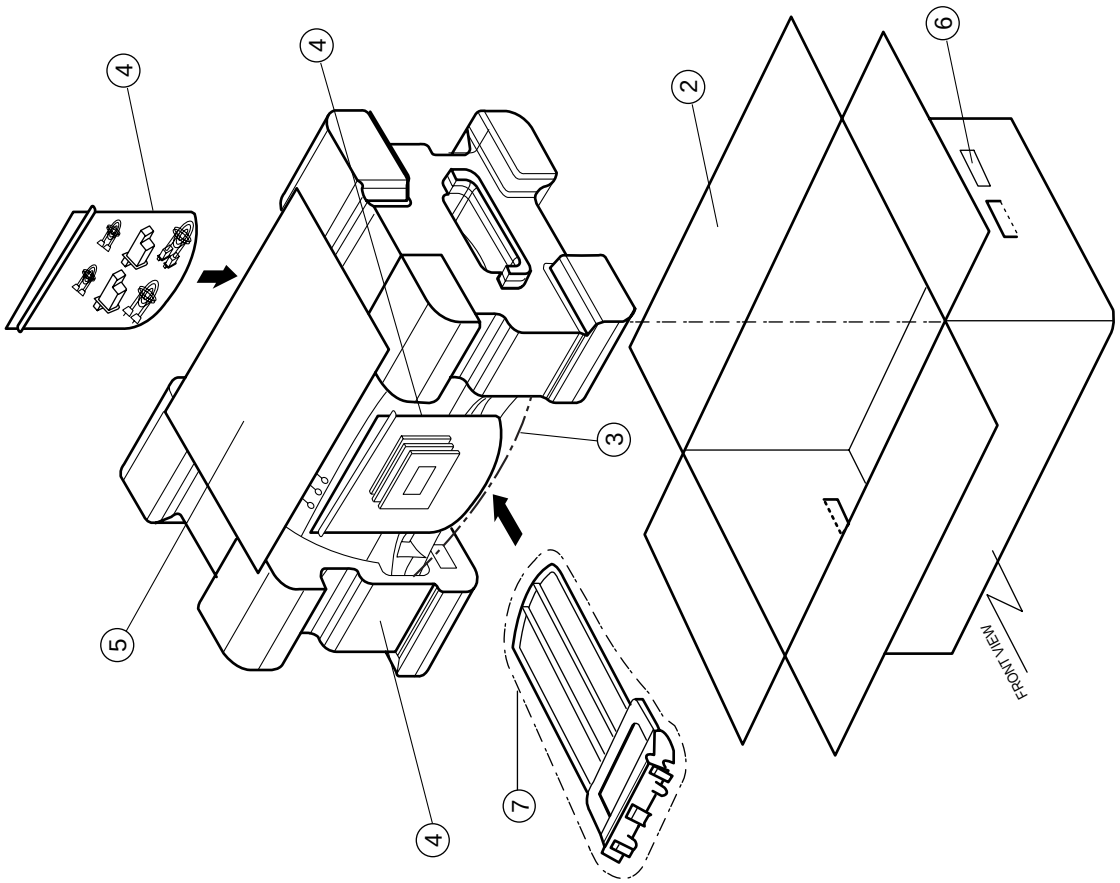
7-1. Exploded View



8. Packing

How to pack SMARTJET

NO		CODE NO	DESCRIPTION	QTY
1	CUSHION-L/R	JB69-20904A	EPS 60M	1
2	BOX-MAIN(MJ-850S)	JB69-10930A	SW-3 WHITE(OFFSET UV)	1
	BOX-MAIN(MJ-860X)	JB69-10932A	SW-3 WHITE(OFFSET UV)	1
3	BAG-SET	JB69- 30901A	HDPE T0.015X700X600	1
4	INA-ACCESSORY	JB98-00918A	MJ-850S	1
		JB98-00922A	MJ-860X	
5	MEC-CARRIER SHEET	JB75-10986A	PE+SC-400	1
6	LABEL(P)-BARCODE	JB68-10208A	ART PAPER	1
7	MEC-GUIDER BANNER	JB75-10944A	HIPS	1



9. Electrical Parts Lists

MAIN B'D P/L

No.	SEC CODE	DESCRIPTION	PART NAME	VENDOR	Q'TY	Location
1	0401-001003	DIODE-REC,MMBD6050LT1,0.2A,70V	MMBD6050LT1	MOT	2	D3,D4
2	0402-000199	DIODE-REC,100V,1A,DO-213AB	EGL41B	GI	1	D2
3	0403-000284	DIODE-ZENER,MMBZ5237B,8.2V,225mW	MMBZ5237BLT1	MOT	1	D14
4	0403-000287	DIODE-ZENER,MMBZ5251BL,22	MMBZ5251	MOT,MATSU	1	D1
5	0404-000112	DIODE-REC,RB420D,25V,100mA	RB420DDT147	ROHM	5	D7,D9,D10,D15,D16
6	0404-000112	DIODE-REC,RB420D,25V,100mA	RB420DDT147	ROHM	1	D8
7	0501-000279	TR-SMALL,KSA1182-Y,PNP,150mW	KSA1182-Y	SEC	1	Q11
8	0501-000342	TR-CHIP,NPN,200mW,SOT-23	KSC1623-Y	SEC	3	Q-8-Q10
9	0501-000415	TR-SMALL,KSP56,DIP,PNP,625mW,TO-92	KSP56	SEC,MOT	1	Q3
10	0501-000457	TR-CHIP,MMBT2222ALT1,NPN,225mW	KST2222A-TF	SEC,MOT	3	Q4,Q5,Q12
11	0501-000462	TR-CHIP,PNP,225mW,SOT-23	MMBT2907A	SEC,MOT	1	Q6
12	0501-000545	TR-SMALL SIGNAL,PNP,500mW,SOT-89	KSA1203-YTF	SEC	1	Q7
13	0503-000129	TR-POWER,TIP112	TIP112	SEC,MOT	1	Q2
14	0601-000012	LED-CHIP,CHIP,Y/GRN,1.5x0.9MM	SM2331-H	KOC	2	LED2-3
15	0601-001064	LED-CHIP,RED/GRN,DUAL COLOR, 3x2.5mm	SLS-YGUR302TM	SEM	1	LED1
16	0604-001033	PHOTO-INTERRUPTER	GP1S523	SHARP	1	SEN1
17	0803-000916	IC-TTL,74LS245,TRANS-VER	SN74LS245DW	MOT,NSC	1	U14
18	1001-000171	IC-LIN,VUFFER,MC14053BD,SOP,16,150MIL	MC14053BD	MOT	1	U2
19	1003-000243	IC-MOTOR DRV,PBL3717A,DIP,16P	PBL3717A	SGS	2	U27,U28
20	1003-001102	IC-MOTOR DRV,TEA3718,DIP	TEA3718DP	SGS	2	U25,U26
21	1003-001137	IC-SOURCE DRIVER,HD8,CD1603,SOP,24P	CD1603(R)	PHI	2	U19,U20
22	1003-001138	IC-SOURCE DRIVER,HD7,CD1602,SOP,20P	CD1602(R)	PHI	2	U23,U24
23	1105-001030	IC-MEM,DRAM,16M, 1M*16BIT,SOJ,42P	KM416C1200BLJ-6	SEC	1	U35
24	1107-001055	IC-FLASH MEMORY,4M,16BIT,TSOP,48P	AM29F400AB-120EC	AMD,FUJIT	1	U10
25	1201-000167	IC-LIN,OP-AMP,SOP,8P,KA358	KA358D-T/F	SEC	1	U3
26	1201-001052	IC-LIN,OP-AMP.SOP.8P.150MIL	MC14577CFR2	MOT	1	U1
27	1202-000164	IC-VOLTAGE COMP,393,SOP,8P,150MIL	KA393D	SEC,MOT	1	U8
28	1203-000623	IC-LIN,DETECTOR,3,SINGLE	KIA7045F	KEC	1	U16
29	2001-000202	R-CARBON,0.5ohm,5%,1/2W	CR1/2W,0.5.J	ABCO	4	R318,R322,R324,R329
30	2007-000023	R-CHIP,120ohm,5%,1/10W	RC2012J121CS	SEM,ROHMK	1	R54
31	2007-000026	R-CHIP,20Oohm,5%,1/10W	RC2012J201CS	SEM,ROHMK	5	R43,R44,R70,R193,R195

No.	SEC CODE	DESCRIPTION	PART NAME	VENDOR	Q'TY	Location
32	2007-000026	R-CHIP, 200ohm,5%,1/10W	RC2012J201CS	SEM,ROHMK	5	R197,R199,R202-R204
33	2007-000028	R-CHIP, 39ohm,5%,1/10W	RC2012J390CS	SEM,ROHMK	19	R215,R63-R66, R69,R301-R313
34	2007-000029	R-CHIP, 0ohm,5%,1/10W	RC2012J000CS	SEM,ROHMK	1	R29
35	2007-000221	R-CHIP, 0ohm,5%,1/10W	RC2012JOOOCS	SEM,ROHMK	3	R362,R363,R353
36	2007-000223	R-CHIP, 1.2Kohm,5%,1/10W	RC2012J122CS	SEM,ROHMK	1	R368
37	2007-000238	R-CHIP, 1.2Kohm,5%,1/8W,3216	RC3216J122CS	SEM,ROHMK	1	R224
38	2007-000240	R-CHIP, 1.5Kohm,1%,1/10w	RC2012F1501CS	SEM,ROHMK	1	R315
39	2007-000285	R-CHIP, 1.5Kohm,1%,1/8W,3216	RC3216F1501CS	SEM,ROHMK	1	R221
40	2007-000286	R-CHIP, 100Kohm,5%,1/8w,3216	RC3216J104CS	SEM,ROHMK	2	R223,R225
41	2007-000288	R-CHIP, 100ohm,1%,1/10w	RC2012F1000CS	SEM,ROHMK	1	R257
42	2007-000290	R-CHIP, 100ohm,1%,1/8w,3216	RC3216F1000CS	SEM,ROHMK	1	L4
43	2007-000290	R-CHIP, 100ohm,5%,1/10W	RC2012J101CS	SEM,ROHMK	55	R74-R118,R120,R121, R123,R158-R165
44	2007-000297	R-CHIP, 100ohm,5%,1/10W	RC2012J101CS	SEM,ROHMK	11	R189,R356-R361,R364 R365,R367,c344
45	2007-000300	R-CHIP, 10Kohm,1%,1/10W	RC2012F1002CS	SEM,ROHMK	2	R328,R317
46	2007-000300	R-CHIP, 10Kohm,5%,1/10W	RC2012J103CS	SEM,ROHMK	3	R328,R317
47	2007-000300	R-CHIP, 10Kohm,5%,1/10W	RC2012J103CS	SEM,ROHMK	4	R1,R2,R73
48	2007-000300	R-CHIP, 10Kohm,5%,1/10W	RC2012J103CS	SEM,ROHMK	4	R175,R200,R216,R242
49	2007-000300	R-CHIP, 10Kohm,5%,1/10W	RC2012J103CS	SEM,ROHMK	3	R252-R254
50	2007-000409	R-CHIP, 10Kohm,5%,1/10W	RC2012J103CS	SEM,ROHMK	1	R332
51	2007-000451	R-CHIP, 15Kohm,5%,1/10W	RC2012J103CS	SEM,ROHMK	1	R188
52	2007-000465	R-CHIP, 180ohm,5%,1/8W,3216	RC3216J181CS	SEM,ROHMK	2	R334,R369
53	2007-000468	R-CHIP, 1Kohm1%,1/10W	RC2012F1001CS	SEM,ROHMK	3	R256,R259,R260
54	2007-000468	R-CHIP, 1Kohm,5%,1/10W	RC2012J102CS	SEM,ROHMK	13	R35,R45-R53,R185,R186
55	2007-000468	R-CHIP, 1Kohm,5%,1/10W	RC2012J102CS	SEM,ROHMK	6	RR207,R209,R210 R214,R245,R246
56	2007-000468	R-CHIP, 1Kohm,5%,1/10W	RC2012J102CS	SEM,ROHMK	3	R262,R314,R319
57	2007-000508	R-CHIP, 1Kohm,5%,1/10W	RC2012J102CS	SEM,ROHMK	5	R321,R325,R330 R336,R339
58	2007-002842	R-CHIP, 14.3Kohm,1%,1/10W	RMC1/10-1432F-Tp	KAMAY	1	R249
59	2007-000565	R-CHIP, 200ohm,5%,1/8W,3216	RC3216J201CS	SEM,ROHMK	2	R205,R247
60	2007-000586	R-CHIP, 220Kohm,5%,1/10W	RC2012J224CS	SEM,ROHMK	1	R264
61	2007-000671	R-CHIP, 22Kohm,5%,1/10W	RC2012J223CS	SEM,ROHMK	1	R205,R247
62	2007-000703	R-CHIP, 2Kohm,5%,1/10W	RC2012J202CS	SEM,ROHMK	2	R262,R340
63	2007-000705	R-CHIP, 3.6Kohm,5%,1/10W	RC2012J334CS	SEM,ROHMK	1	R208
64	2007-000705	R-CHIP, 3.6Kohm,5%,1/8W,3216	RC3216J362CS	SEM,ROHMK	1	R187

No.	SEC CODE	DESCRIPTION	PART NAME	VENDOR	Q'TY	Location
65	2007-000710	R-CHIP, 6.8Kohm,5%,1/10W	RC2012J682CS	SEM,ROHMK	1	R265
66	2007-000757	R-CHIP, 330Kohm,5%,1/10W	RC2012J334CS	SEM,ROHMK	1	R251
67	2007-000766	R-CHIP, 300ohm,5%,1/10W	RC2012J331CS	SEM,ROHMK-	2	R211,R212
68	2007-000814	R-CHIP, 39.2Kohm,1%,1/8W,3216	RC3216F3922CS	SEM,ROHMK	1	R222
69	2007-000844	R-CHIP, 3Kohm,5%,1/10W	RC2012J302CS	SEM,MURATA	2	R218,R255
70	2007-000941	R-CHIP, 47Kohm,5%,1/10W	RC2012J473CS	SEM,MURATA	3	R243,R244,R338
71	2007-000964	R-CHIP, 5.1Kohm,5%,1/10W	RC2012J512CS	SEM,MURATA	11	R37-R42,R67,R68,R176 R191,192
72	2007-000964	R-CHIP, 5.1Kohm,5%,1/10W	RC2012J512CS	SEM,MURATA	6	R194,R196,R198,R213 R220,R337
73	2007-000784	R-CHIP, 34.8Kohm,1%,110W	RC2012F3482CS	SEM,MURATA	1	R250
74	2007-001001	R-CHIP, 510ohm,5%,1/10W	RC2012J511CS	SEM,MURATA	3	R219,R316,R327
75	2007-001013	R-CHIP, 51ohm,5%,1/10W	RC2012J510CS	SEM,MURATA	1	R258
76	2007-001039	R-CHIP, 56Kohm,5%,1/10W	RC2012J563CS	SEM,MURATA	5	R190,R320,R323 R326,R331
77	2007-001055	R-CHIP, 750ohm,5%,1/10w	RC2012J6222CS	SEM,MURATA	1	R217
78	2007-001155	R-CHIP, 39ohm,+-5%,1/16W,L,PLCC,8P	RC2012J751CS	SEM,MURATA	1	R36
79	2011-001094	R-NETWORK, 39ohm,+-5%,1/16W,L,PLCC,8P	RP164PJ390CS	SEM,MURATA	2	RA1,RA2
80	2203-000009	C-CHIP, 820pF,5%,50V,NPO,2012	CL21C821JBNC	SEM,MURATA	6	C54,C177,C178,C182 C183,C187
81	2203-000009	C-CHIP, 820pF,5%,50V,NPO,2012	CL21C821JBNC	SEM,MURATA	3	C188,C192,C193
82	2203-000192	C-CHIP, 100nF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	1	C1
83	2203-000192	C-CHIP, 100nF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	2	C9,C27
84	2203-000192	C-CHIP, 100nF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	15	C30-C37,C39,C41-C46
85	2203-000192	C-CHIP, 100nF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	13	C48-C52,C55-C58 C75-C77,C94
86	2203-000192	C-CHIP, 100PF, 5%,50V,NP0,2012	CL21F104ZBNC	SEM,MURATA	7	C96,C99-C101C103,C104,C109
87	2203-000192	C-CHIP, 10nF,10%,50V,X7R,2012	CL21F104ZBNC	SEM,MURATA	1	C110
88	2203-000192	C-CHIP, 10pF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	1	C113
89	2203-000192	C-CHIP, 150pF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	1	C136
90	2203-000192	C-CHIP, 150pF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	9	C154-C156,C170-C172 C174,C176,C179
91	2203-000192	C-CHIP, 150pF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	6	C180,C184,C185,C189 C190,C195
92	2203-000192	C-CHIP, 150pF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	3	C199,C202,C339
93	2203-000192	C-CHIP, 150pF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	3	C300,C352,C353
94	2203-000239	C-CHIP, 150pF,5%,50V,NPO,2012	CL21C101JBNC	SEM,MURATA	7	C26,C203,C307-C311
95	2203-000260	C-CHIP, 150pF,5%,50V,NPO,2012	CL21B103KBNC	SEM,MURATA	2	C40,C53
96	2203-000295	C-CHIP, 150pF,5%,50V,NPO,2012	GRM40COG100J50PT	SEM,MURATA	1	C108
97	2203-000361	C-CHIP, 150pF,5%,50V,NPO,2012	CL21C151JBNC	SEM,MURATA	1	C107

No.	SEC CODE	DESCRIPTION	PART NAME	VENDOR	Q'TY	Location
98	2203-000429	C-CHIP, 18pF,5%,50V,NPO,2012	CL21C180BNC	SEM,MURATA	1	C348
99	2203-000455	C-CHIP, 1nF,5%,50V,NPO,2012	CL21C102JBNC	SEM,MURATA	12	C10-C17,C23-C25,C111
100	2203-000455	C-CHIP, 1nF,5%,50V,NPO,2012	CL21C102JBNC	SEM,MURATA	1	C112
101	2203-000595	C-CHIP,220pF,5%,50V,NPO,2012	CL21C221JBNC	SEM,MURATA	5	C18-C20,C314,C315
102	2203-000634	C-CHIP,22pF,5%,50V,NPO,2012	CL21C220JBNC	SEM,MURATA	3	C21,C22,C175
103	2203-000634	C-CHIP,22pF,5%,50V,NPO,2012	CL21C220JBNC	SEM,MURATA	4	C181,C186,C191,C337
104	2203-000683	C-CHIP,27pF,5%,50V,NPO,2012	CL21C270JBNC	SEM,MURATA	2	C345,C346
105	2203-000818	C-CHIP,33pF,5%,50V,NPO,2012	08055A330JATMA	AVX,MURATA	1	C338
106	2203-001132	C-CHIP,680pF,5%,50V,NPO,2012	CL21C681JBNC	SEM,MURATA	1	C106
107	2401-000032	C-AL.DIP,100U,50V,20%,100U/50V	SMS1HVB101MTP	SEM,SAMY	1	C102
108	2401-000172	C-AL.ELEC,1000U,20%,35V	SHL1VVB108MTP	SAMY,SAMHE	1	C95
109	2402-000110	C-AL.SMD,106M,10U/16V,GP,4X7mm,5mm	ECEV1CA100SR	MATSU,SAMY	3	C98,C105,C194
110	2402-000135	C-AL.SMD,226M,IC,22U/16V	ECEV1CA220SR	MATSU,SAMY	2	C115,C137
111	2402-000168	C-AL.SMD,100U,16V,20%,100U/16V	ECEV1CA101P	MATSU,SAMY	2	C97,C114
112	2703-000204	INDUCTOR-SMD,390uH,10%	LQH4N391K04	MURAT	1	BD6
113	2801-000252	CRYSTAL-UNIT,30MHz,50ppm,28-AAM,20pF	HC-49/U,30MHZ,20PF	SUNNY	1	Y2
114	3301-000325	BEAD-CHIP,FERRITE CORE	HF50ACB322513-T	TDK	6	BD1,BD3,BD5,BD7, BD10,BD11
115	3301-000362	BEAD-CHIP,FERRITE CORE	HF50ACC322513	TDK	4	BD12-BD15
116	3404-001001	SWITCH-TACT,RIGHT ANGLE	SKHH17910C	LGE	4	SW5-8
117	3702-001025	CONN-RIBBON,36P,STRAIGHT,AU,FEMALE,P-BRON	57GE-40360-853B(D58)	DDK	1	CON8
118	3708-001187	CONN-HEADER,FPC,23P,1mm	08-6232-023-007-800	ELCO	2	CON9,CON10
119	3708-001224	CONN-HEADER,14P,1mm	08-6232-014-007-800	ELCO	1	CON2
120	3711-000225	CONN-HEADER,4P,1R,2.5mm,STRAIGHT	5045-04A,ST	MOLEX	2	CON4.CON5
121	3711-000280	CONN-HEADER,6P,1R,2.5mm,STRAIGHT	5045-06A,ST	MOLEX	1	CON1
122	3711-003409	CONN-HEADER,3P,1R,2mm,STRAIGHT	35303-0350	MOLEX	1	CON7
123	4701-001020	FREQ-ATTENUATOR,5-80MHz,15dB,0.03W	FS741AZB	IMI	1	U297
124	8710700006XA	IC-TTL,7406,BUFFER,SOP	SN7406D	TI,PHI	1	U18
125	8810200339XA	IC-LIN,LM339,COMP.SOP,14P	KA339D	SEC,PHI	1	U4
126	JB13-10503A	IC-ASIC,MICRO PROCESSOR,160R,SMD	KS32C6200	SEC	1	U15
127	JB13-10504A	IC-ASIC,IMAGE PROCESSOR,80P,SMD	CIP1A	SEC	1	U17
128	JB41-10507A	PCB-MAIN,FR-4,4L,215x87x1.6T	MAIN PCB	KIJU	1	PCB

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129	0401-000116	DIODE-WITCHING,MMSD914T1,100V,200mA	MMBD914T1	MOT	3	D11-13
130	0407-000101	DIODE-ARRAY,DA204K,20V,100mA,C2-3	DA204KT147	ROHM	2	D5,D6
131	0501-000342	TR-CHIP,NPN,200mW,SOT-23	KSC1623-Y	SEC	1	Q1
132	1001-000171	IC-LIN,BUFFER,MC14053BD,SOP,16,150MIL	MC14053BD	MOT	1	U7
133	1201-000105	IC-LIN,SOP,8,SINGLE	MC34119DR2	MOT	1	U22
134	1201-000167	IC-LIN,OP-AMP,SOP,8P,KA358	KA358D-T/F	SEC	2	U5,U6
135	1205-001285	IC-LIN,MODERM,KS16116,QFP,100P,9600BPS	KS16116-02	SEC	1	U21
136	2007-000029	R-CHIP,0ohm,5%,1/10W	RC2012J000CS	SEM,ROHMK	2	R279,R282
137	2007-000282	R-CHIP,100Kohm,5%,1/10W	RC2012J004CS	SEM,ROHMK	1	R283
138	2007-000290	R-CHIP,100ohm,5%,1/10W	RC2012J001CS	SEM,ROHMK	1	R122
139	2007-000300	R-CHIP,10Kohm,5%,1/10W	RC2012J003CS	SEM,ROHMK	3	R268,R269,R275
140	2007-000300	R-CHIP,10Kohm,5%,1/10W	RC2012J003CS	SEM,ROHMK	2	R285,R300
141	2007-000325	R-CHIP,118Kohm,5%,1/10W	RC2012J1183CS	SEM,ROHMK	1	R273
142	2007-000395	R-CHIP,150Kohm,5%,1/10W	RC2012J154CS	SEM,ROHMK	3	R290,R293,R294
143	2007-000401	R-CHIP,150ohm,5%,1/10W	RC2012J151CS	SEM,ROHMK	1	R278
144	2007-000477	R-CHIP,1Mohm,5%,1/10W	RC2012J105CS	SEM,ROHMK	2	R289,R297
145	2007-000551	R-CHIP,20ohm,5%,1/10W	RC2012J200CS	SEM,ROHMK	1	R276
146	2007-000565	R-CHIP,220Kohm,5%,1/10W	RC2012J224CS	SEM,ROHMK	3	R286,R291,R298
147	2007-000671	R-CHIP,2Kohm,5%,1/10W	RC2012J202CS	SEM,ROHMK	1	R183
148	2007-000703	R-CHIP,3.6Kohm,5%,1/10W	RC2012J362CS	SEM,ROHMK	1	R182
149	2007-000738	R-CHIP,30Kohm,5%,1/10W	RC2012J303CS	SEM,ROHMK	1	R296, R270
150	2007-000791	R-CHIP,36.5Kohm,1%,1/10W	RC2012F3652CS	SEM,ROHMK	1	R284
151	2007-000844	R-CHIP,3Kohm,5%,1/10W	RC2012J302CS	SEM,ROHMK	1	R272
152	2007-000872	R-CHIP,4.7Kohm,5%,1/10W	RC2012J1472CS	SEM,ROHMK	2	R292,R295
153	2007-000920	R-CHIP,47.5Kohm,1%,1/10W	RC2012J4752CS	SEM,ROHMK	1	R271
154	2007-001078	R-CHIP,600ohm,5%,1/10W	RC2012J601CS	SEM,ROHMK	2	R287,R288
155	2007-001220	R-CHIP,86.6Kohm,1%,1/10W	RC2012F8662CS	SEM,ROHMK	2	R274,R277
156	2203-000192	C-CHIP,100nF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	6	C121,C123,C125, C127-C129
157	2203-000192	C-CHIP,100nF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURA	7	C135,C138,C140 C143-C145,C147

No.	SEC CODE	DESCRIPTION	PART NAME	VENDOR	Q'TY	Location
158	0401-000116	C-CHIP,100nF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	4	C151-C153,C343
159	0407-000101	C-CHIP,120pF,5%,50V,NPO,2012	CL21C121JBNC	SEM,MURATA	1	C141
160	0501-000342	C-CHIP,18pF,5%,50V,NPO,2012	CL21C180JBNC	SEM,MURATA	1	C132
161	1001-000171	C-CHIP,1nF,5%,50V,NPO,2012	CL21C102JBNC	SEM,MURATA	3	C122,C126,C130
162	1201-000105	C-CHIP,1UF,5%,16V,Y5V,2012	0805YG105ZATNA	AVX,ROHM	2	C133,C148
163	1201-000167	C-CHIP,270pF,5%,50V,NPO,2012	CL21C271JBNC	SEM,MURATA	1	C134
164	1205-001285	C-CHIP,39pF,5%,50V,NPO,2012	CL21C390JBNC	SEM,MURATA	1	C131
165	2007-000029	C-CHIP,68nF,10%,25V,X7R,2012	CL21B683KANG	SEM,MURATA	2	C139,C142
166	2007-000282	C-CHIP,75pF,5%,50V,NPO,2012	CL21C750JBNC	SEM,MURATA	1	C150
167	2007-000290	C-AL.SMD,106M,10U/16V,GP,4x7mm,5mm	ECEV1CA100SR	MATSU,SAMY	1	C149
168	2007-000300	C-AL.SMD,106M,1V,10U/35V	ECEV1VA100SR	MATSU,SAMY	1	C124
169	2007-000300	C-AL.SMD,226M,1V,22U/16V	ECEV1CA220SR	MATSU,SAMY	1	C118
170	2007-000325	C-TANTAL,1uF,20%,16V,3216	TAJA105M016R	SEM,AVX	1	C120
171	2007-000395	CRYSTAL,24.00014M,HC-49/S,18PF	HC-49/S,24.00014M	ITC,SUNNY	1	Y1
172	2007-000401	CONN-WALL HEADER,12P,2mm,STRAIGHT	35303-1250	MOLEX	1	CON3
173	2007-000477	CONN-WALL HEADER,2P,2mm,STRAIGHT	35303-0250	MOLEX	1	CON6

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No.	SEC CODE	DESCRIPTION	PART NAME	VENDOR	Q'TY	Part Number
1	0401-000140	DIODE-SWITCHING, 1N4148, 100V, 200mA, 500mW, 4nS, DO	IN4148T/R	DSMS, NSC, TERRY	2	D1,D8
2	0402-000339	DIODE-BRIDGE, W06F, 600V, 1.5A	W06G	GI	1	BD1
3	0403-000139	DIODE-ZENER, 1N4734A, 5.6V, 5%, 1W, DO-41, TP	1N4734AT/R	ITT, MOT	1	ZD8
4	0403-000155	DIODE-ZENER, 1N4748A, 22V, 5%, 1W, DO-41, TP	1N4748A	ITT, MOT	1	ZD5
5	0403-000532	DIODE-ZENER, 1N4740A, 10V, 5%, 1W, DO-41, TP	1N4740A	ITT, MOT	1	ZD7
6	0403-000537	DIODE-ZENER, 1N4749A, 24V, 5%, 1W, DO-41, TP	1N4749A	ITT, MOT	1	ZD9
7	0501-000242	TR-SMALL SIGNAL, BC547B, NPN, 500mW, TO-92, TP, 200	BC547B	ITT, NSC	1	Q5
8	0501-000500	TR-SMALL SIGNAL, KSP45, NPN, 625mW, TO-92, TP, 50-20	MPSA45	SEC, MOT	1	Q1
9	0501-000550	TR-SMALL SIGNAL, BC327-16, PNP, 625mW, TO-92, TP	BC327-16	SEC, ITT	2	Q6-7
10	0502-000133	TR-POWER, 2SA1156, PNP, 1W, TO-126, -, 40-80	2SA1156-R	SEC, NEC	1	Q2
11	0505-000123	FET-SILICON, BS170, N, 60V, 500mA, 5ohm, 350mW	BS170-RLRA	ITT, MOT	1	Q4
12	0604-000118	PHOTO-COUPLER, TR, 20-300%, 200mW, DIP-4, ST	PC814	SHARP, TSB	1	U2
13	0604-000119	PHOTO-COUPLER, PC817C, 200-400%	PC817C	SHARP, KOC, TSB	1	U6
14	0604-000237	PHOTO-COUPLER, PC817, NO-MARKING	PC817	SHARP, KOC, TSB	2	U4-5
15	1405-000170	VARI, 82V, DISC, 9MM	V82ZA2	HARRIS, MATSU	1	VAR1
16	2001-000044	REF-CARBON, 1.2Kohm, 5%, 1/4W	CR1/4W, 1.2K, J	ABCO	1	R6
17	2001-000294	REF-CARBON, 10M, 5%, 1/4W	CR1/4W, 10M, J	ABCO	1	R7
18	2001-000626	REF-CARBON, 300, 300ohm, 5%, 1/4W	MR1/4W, 300, F	ABCO	1	R49
19	2001-000637	REF-CARBON, 30, 2%, 1/2W	CR1/2W, 30, G	ABCO	1	R48
20	2001-000643	REF-CARBON, 330K, 5%, 1/4W	CR1/4W, 330K, J	ABCO	1	R9
21	2001-001004	REF-CARBON, 82ohm, 5%, 1/4W	CR1/4W, 82, J	ABCO	1	R4
22	2007-000029	REF-CHIP, 0, 5%, 1/10W, 2012	RC2012J000BS	SEM,	4	R26-27, R42, R57
23	2007-000033	REF-CHIP. 0, 5%, 1/8W, 3216	RC3216J000BS	ROHMK	27	J3-J4, J8, J10-J32
24	2007-000033	REF-CHIP. 0, 5%, 1/8W, 3216	RC3216J000BS	SEM,	2	R31, R50
25	2007-000282	REF-CHIP, 100K, 5%, 1/10W, 150V	RC2012J104BS	ROHMK	3	R3, R33, R101
26	2007-000300	REF-CHIP, 10K, 5%, 1/10W, 150V	RC2012J103BS	SEM,	1	R38
27	2007-000355	REF-CHIP, 12K, 5%, 1/10W, 150V	RC3216J123CS	ROHMK	1	R47
28	2007-000376	CAP-CERAMIC, 15NF, 50V, 3216	CL21B153ZBNC	SEM,	1	C30
29	2007-000409	REF-CHIP, 15Kohm, 5%, 1/10W, 150V	RC2012J153CS	ROHMK	2	R30, R40
30	2007-000449	REF-CHIP, 180ohm, 5%, 1/10W, 150V	RC2012J181CS	SEM,	1	R52
31	2007-000468	REF-CHIP, 1K, 5%, 1/10W, 150V	RC2012J102BS	ROHMK	1	R13
32	2007-000498	REF-CHIP, 2.2M, 5%, 1/10W, 150V	RC2012J225BS	SEM,	2	R22,24
33	2007-000572	REF-CHIP, 220ohm, 5%, 1/10W, 2012	RC2012J221CS	ROHMK	1	R45

No.	SEC CODE	DESCRIPTION	PART NAME	VENDOR	Q'TY	Part Number
34	2007-000757	REF-CHIP, 330K, 5%, 1/10W, 150V	RC2012J334BS	SEM, ROHMK	1	R10, 21, 23, 32
35	2007-000774	REF-CHIP, 33Kohm, 5%, 1/10W, 2012	RC2012J333CS	SEM, ROHMK	1	R41
36	2007-000931	REF-CHIP, 470, 5%, 1/10W	RC2012J471CS	SEM, ROHMK	1	R44
37	2007-001001	REF-CHIP, 510, 5%, 1/10W	RC2012J511BS	SEM, ROHMK	1	R39
38	2007-001071	REF-CHIP, 6.8K, 5%, 1/10W, 150V	RC3216J682CS	SEM, ROHMK	1	R2
39	2007-001141	REF-CHIP, 7.5K, 5%, 1/10W	RC2012J752BS	SEM, ROHMK	1	R51
40	2203-000192	CAP-CERAMIC, 100NF, 50V, 5%	CL21F104ZBNC	SEM, MURATA	1	C37
41	2203-000260	CAP-CERAMIC, 10NF, 50V, 5%, 2012	CL21B103KBNC	SEM, MURATA	3	C6, 11, 40
42	2203-000429	CAP-CERAMIC, 18NF, 5%, 50V, 2012	CL21C180JBNC	SEM, MURATA	1	C27
43	2203-000455	CAP-CERAMIC, 1NF, 50V, 5%, 5M, NPO	CL21C102JBNC	SEM, MURATA	2	C12, 22
44	2203-000595	CAP-CERAMIC, 220PF, 50V, 5%, 2012	CL31C221JBNC	SEM, MURATA	7	C13-17, 20, 21
45	2203-001142	CAP-CERAMIC, 68NF, 50V, 5%, 2012	CL21B683KANC	SEM, MURATA	2	C4, 18
46	2305-000218	CAP-FILM, MPEF, 1UF, 250V, 10%	MMT.2E, 105K	SHIN	1	C3
47	2401-000217	CAP-AL .ELEC, 100NF, 50V, 20%	1SS1HAB104MAN04007	SEM, SAMH	1	C45
48	2401-000486	CAP-AL .ELEC, 10UF, 50V	CESSM1H100MAAT	SEM, SAMY, SAMH	3	C25, 28, 38
49	2401-000597	CAP-AL .ELEC, 1UF, 50V	CESSM1H010MAAB	SEM, SAMY, SAMH	2	C34, 42
50	2401-001368	CAP-AL .ELEC, 470UF, 16V	CESSL1C471MAAT	SEM, SAMY, SAMH	1	C32
51	2401-001509	CAP-AL .ELEC, 47UF, 16V	CESSM1C470MAAT	SEM, SAMY, SAMH	1	C39
52	2401-001775	CAP-AL .ELEC, 0.47UF/50V	CESSM1HR47MAAB	SEM, SAMY, SAMH	1	C31
53	2403-000124	CAP-TA, DIPPED, 10uF, 20%, 16V(50v)	TBG1C-100MSS	DAEWO, SPRAG	1	C36
54	2404-000151	CAP-TA. ELEC, 1UF, 20%	T491A105M016AS	SEM, AVX, KEMET	1	C10
55	2802-001029	C-RESO, 3.58M, 0.5%:CSA3.58MHz	CSA3.58MG312AM	MURATA	1	X1
56	3501-001025	RELAY-MINIATURE, 12V:2FORM	G6A-234P-BS	OMRON	1	CML1
57	3711-002807	CONN-HEADER, 6P, 2MM, STRAIGHT	35303-0650	MOLEX	1	P3
58	3711-002813	CONN-HEADER, 12P, 2mm, STRAIGHT	35303-1250	MOLEX	1	P1
59	4715-000127	SURGE ABSORBER, MEP, ARRESTER, 2P, 5X11, 330V	DSS-301L-A22R	MITSUBISHI	3	ARS1, 2, 3
60	BH39-40305U	WIRE-NO SHEATH, JUMPER WIRE, AWG22(0.6PI)	JUMPER-WIRE	KJEW, LGC	10	JP2-JP5, JP10-JP11, JP13-JP16, ARS4
61	JB41-10508A	MJ-715S, FR-4, 1L, T1.6mm, 110X90, LIU PCB	LIU PCB	CJE	1	PCB
62	JF13-10073A	I-LIU Chip, STI9510, DIP, 40P	STI9510	AMS	1	U3
63	JF27-60051A	COIL-FILTER, IND-RF, 60UH	SBT-0260T	TOKIN	2	FLT1-2
64	JG26-50001A	600:600 Transformer, 100-1016	100-1016	SUNGMOON	2	T2, T3

SCAN B'D P/L

No.	SEC CODE	DESCRIPTION	PART NAME	VENDOR	Q'TY	Location
1	2007-000703	R-CHIP,3.6Kohm,5%,1/10W	RC2012J362CS	SEM,ROHMK	1	R1
2	2007-000868	R-CHIP,4.7Kohm,1%,1/10W	RC2012F4701CS	SEM,ROHMK	2	R3,R4
3	2007-001013	R-CHIP,51ohm,5%,1/10W	RC2012J510CS	SEM,ROHMK	1	R5
4	2007-000518	R-CHIP,2.7Kohm,5%,1/10W	RC2012J272CS	SEM,ROHMK	1	R2
5	2203-000192	C-CHIP,100nF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	4	C1,C4,C6,C8
6	2203-000295	C-CHIP,10pF,5%,50V,NPO,2012	GRM40COG100J50PT	AVX,MURATA	1	C5
7	2402-000110	C-AL,SMD,10uF,20%,16V	ECEV1CA100SR	MATSU,SAMY	3	C2,C3,C7
8	3708-001224	CONN-HEADER,14P,1mm,DIP	08-6232-014-007-800	ELCO	1	CON1
9	1201-001052	IC-LIN,OP-AMP,SOP,8P,150MIL	MC14577CFR2	MOT	1	U1
10	0605-001014	CCD-MONO,TCD1001P	TCD1001P	TOSHI	1	U2(MONO ONLY)
11	0605-001015	CCD-COLOR,UPD3700CS	UPD3700CS	NEC	1	U2(COLOR ONLY)
12	JB41-10509A	SMARTJET CCD PCB,2-LAYER	OCD PCB		1	PCB

LAMP B'D P/L

No.	SEC CODE	DESCRIPTION	PART NAME	VENDOR	Q'TY	Location
1	4713-001047	LAMP-MONO,6V,BQ051-26704A-ST	BQ051-26704A-ST	STANLEY	2	LAMP1,2
2	4713-001048	LAMP-COLOR,6V,BQ405-12020A-ST	BQ405-12020A-ST	STANLEY	2	LAMP1,2
3	1404-001081	THERMISTOR,100Kohm	NTH5G2M42B104J04TE	MURATA	1	T1
4	JB41-1051A	SMARTJET LAMP PCB,1-LAYER	LAMP PCB		1	PCB

SENSOR B'D P/L

No.	SEC CODE	DESCRIPTION	PART NAME	VENDOR	Q'TY	Location
1	0604-001045	PHOTO-INTERRUPTER,TR,0.8%-,100mW,DIP	GP1S94	SHARP	1	S1
2	1209-001016	IC-THERMOMETER,DS1621,SOP,8P	DS1621S	DALLA	1	U1
3	2007-000941	R-CHIP,47Kohm,5%,1/10W	RC2012J473CS	SEM,ROHMK	3	R1,R2,R3
4	2007-000542	R-CHIP,200ohm,5%,1/8W	RC3216J201CS	SEM,ROHMK	1	R3
5	2203-000192	C-CHIP,100nF,5%,50V,NPO,2012	CL21F104ZBNC	SEM,MURATA	1	C1
6	3708-001198	CONN-FPC,6P,1mm,SMD	04-6232-106-103-800	ELCO	1	CN1
7	Jb41-10504A	SENSOR PCB	PCB	ZERO	1	PCB

SMPS B'D P/L

No.	ITEM	PART No.	DESCRIPTION	VENDOR	Q'TY	LOCATION
1001	IC-SHUNT REG	KA431AZ	40V 0.1A	SAMSUNG	1	U1
1001-A		KIA431Z		KEC		
1002	IC-REGULATOR	KA7805P	5V 1A	SAMSUNG	1	U2
1002-A		KIA7805P		KEC		
1003	DIODE-SWITCHING	1N4148	75V 0.15A	ROHM KOREA	1	D1
1003-A		1N4148		UNIZON		
1004	DIODE-SCHOTTKY	1N5822	40V 2.5A	MICRO SEMI	1	D2
1004-A		D3S6M	60V 2.5A	SHINDENGEN		
1005	DIODE-F.R	SF34	200V 3A	MICRO SEMI	2	D3, 4
1005-A		S3L20U		SHINDENGEN		
1006	DIODE-ZENER	MTZ20C	0.5W 20V	ROHM KOREA	1	ZD1
1006-A		UZ20BSC		UNIZON		
1007	DIODE-ZENER	MTZ6.2C	0.5W 6.2V	ROHM KOREA	1	ZD2
1007-A		UZ6.2BSC		UNIZON		
1008	DIODE-ZENER	TZP15B	1.0W 15V	ROHM KOREA	1	ZD3
1008-A		UZP15B		UNIZON		
1009	FET	SSP5N80A	800V 5A	SAMSUNG	1	Q1
1010	TR	KSC5020-0	500V 3A	SAMSUNG	1	Q2
1011	TR-SWITCHING	KSC1008-Y	80V 0.7A	SAMSUNG	2	Q3, 4
1012	PHOTO-COUPLER	PC123FY2	5KVac 50mA	SHARP	1	PC1
1013	DIODE-BRIDGE	D2SB(A)60	600V 2A	SHINDENGEN	1	BD1
2001	CAP-X	KNB1530-154	AC275V 154M MINI TYPE	ISKRA	2	C1, 4
2001-A		PCX2 335M 154	AC275V 154M MINI TYPE	PHILKOR		
2002	CAP-Y	HCYE2G222MAA	AC400V 222M VDE (2600V)	SAMSUNG	2	C2, 3
2002-A		SCE2G222M08BS7		SAMHWA		

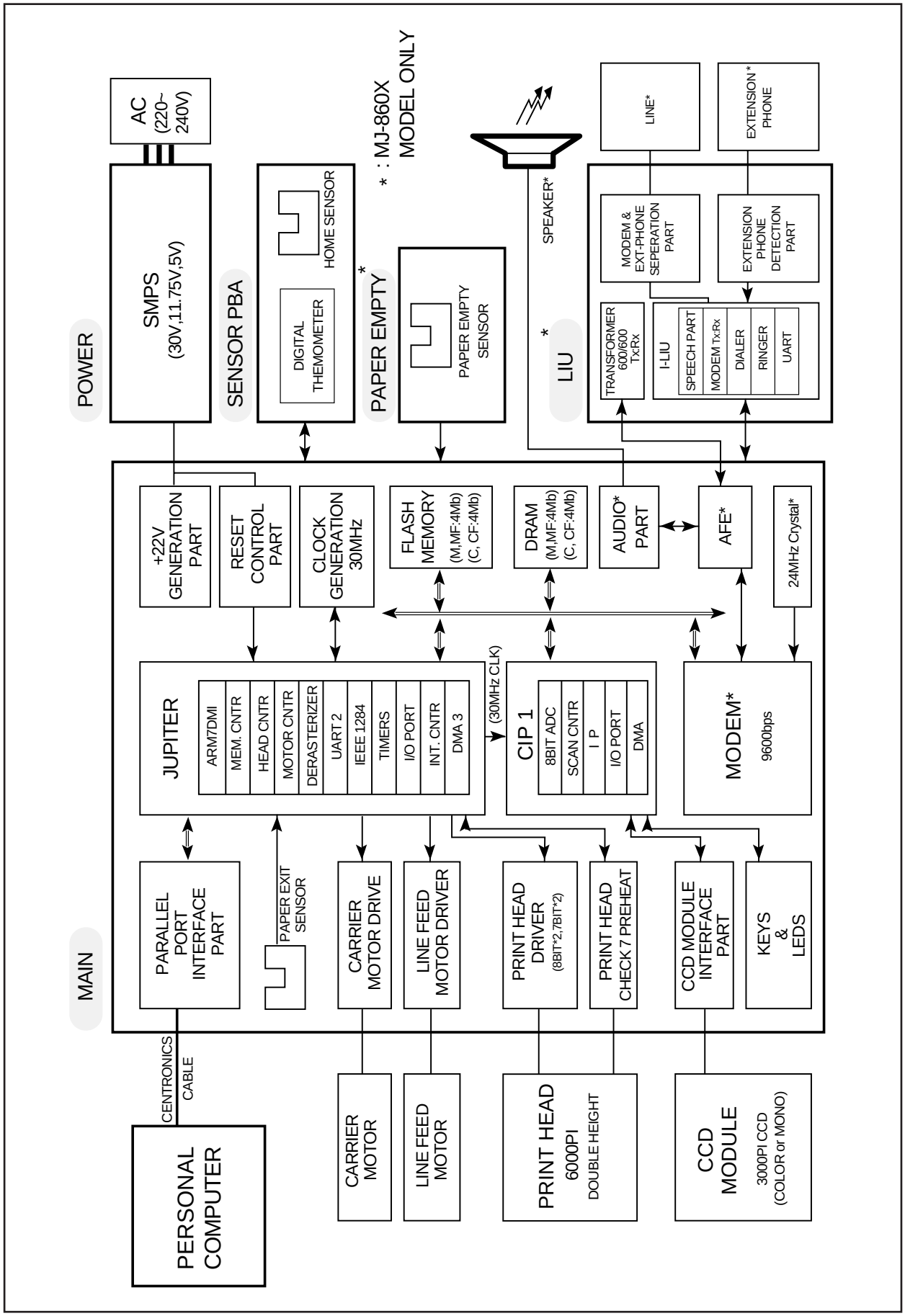
No.	ITEM	PART No.	DESCRIPTION	VENDOR	Q'TY	LOCATION
2003	CAP-Y	HCYE2G222MAD	AC400V 222M (4000V)	SAMSUNG	1	C6
2003-A		SDE2G222M10BS1		SAMHWA		
2004	CAP-ELEC	SMH400V100uF	400V 100uF 22*30	SAMYOUNG	1	C7
2004-A		HC400V100uF		SAMHWA		
2005	CAP-ELEC	SXE16V820uF	16V 820uF 10*25	SAMYOUNG	1	C14
2005-A		RX16V820uF		SAMHWA		
2006	CAP-ELEC	SMS25V47uF	25V 47uF 5*11	SAMYOUNG	2	C16, 23
2006-A		SG25V47UF		SAMHWA		
2007	CAP-ELEC	SXE50V330uF	50V 330uF 10*30	SAMYOUNG	2	C17, 18
2007-A		RX50V330uF		SAMHWA		
2008	CAP-ELEC	SXE25V560uF	25V 560uF 10*25	SAMYOUNG	2	C20, 21
2008-A		RX25V560uF		SAMHWA		
2009	CAP-ELEC	SRE50V1uF	50V 1uF 3.5*5	SAMYOUNG	1	C22
2009-A		SE50V1uF		SAMHWA		
2010	CAP-ELEC	SMS50V22uF	50V 22uF 5*11	SAMYOUNG	1	C19
2010-A		SG50V22uF		SAMHWA		
2011	CAP-CERAMIC	CKR3A471KO6BS	1KV 471K BL	SAMHWA	1	C9
2011-A		HCYB3A471KDS		SEMCO		
2012	CAP-CERAMIC	CKR3A101K06BS	1KV 101K BL	SAMHWA	1	C12
2012-A		HCYB3A101KDS		SEMCO		
2013	CAP-CERAMIC	CCYV1H104ZF	50V 104Z	SEMCO	1	C15
2013-A		CGF1H104ZFK		SAMHWA		
2014	CAP-MYLAR	TY2A223J	100V 223J	SAMHWA	1	C10
2014-A		TS1H223J	50V 223J	SAMHWA		
2015	CAP-MYLAR	TY2A683J	100V 683J	SAMHWA	1	C11
2015-A		CQ92MST2A683J		DONGSUNG		
2016	CAP-M.F	TM2J683K	630V 683K	SAMHWA	1	C8
2016-A		MMW630V683K		DONGSUNG		
3001	R-VARIABLE	EVNDJAA03B52	1/2W 500Ω TOP ADJ	MATSUSHITA	1	VR1

No.	ITEM	PART No.	DESCRIPTION	VENDOR	Q'TY	LOCATION
3002	R-METAL	1/2W 560K-J	NORMAL TYPE L:9mm	ABCO	1	R1
3002-A	R-M.O	1W 560K-J	MINI	PILKOR ABCO		
3003	R-METAL OXIDE	1W 330K-J MINI		PHILKOR	2	R2, 3
3003-A				ABCO		
3004	R-METAL OXIDE	1W 47-J MINI		PHILKOR	1	R4
3004-A				ABCO		
3005	R-METAL OXIDE	1W 470-J MINI		PHILKOR	1	R5
3005-A				ABCO		
3006	R-METAL	1/8W 100-J		PHILKOR	1	R6
3006-A				ABCO		
3007	R-METAL	1/8W 47K-J		PHILKOR	1	R7
3007-A				ABCO		
3008	R-METAL OXIDE	1W 1.0-J MINI		PHILKOR	2	R8, 9
3008-A				ABCO		
3009	R-METAL	1/8W 330-J		PHILKOR	1	R10
3009-A				ABCO		
3010	R-METAL	1/4W 390-J		PHILKOR	1	R11
3010-A				ABCO		
3011	R-METAL OXIDE	1W 110-J MINI		PHILKOR	1	R12
3011-A				ABCO		
3012	R-METAL	1/8W 4.7K-J		PHILKOR	1	R13
3012-A				ABCO		
3013	R-METAL	1/8W 68-J		PHILKOR	1	R14
3013-A				ABCO		
3014	R-METAL	1/8W 10K-J		PHILKOR	1	R15
3014-A				ABCO		
3015	R-METAL	1/8W 2.4K-J		PHILKOR	1	R16
3015-A				ABCO		
4001	THERMISTOR	DSC 10D-9	10ohm 9pi	SHINHO	1	NT1
4001-A		NTC 10D-9		SAMKYUNG		

No.	ITEM	PART No.	DESCRIPTION	VENDOR	Q'TY	LOCATION
4002	SURGE ABSORBER	JVR14N471K UL		JOYIN	1	TNR1
4002-A		SVC471D-14A		SAMHWA		
4003	BEAD CORE	BFD3550R2F		SAMHWA	1	B1
4003-A		RTD3550S(R2)		NAMYANG		
4004	BEAD CORE	BFS3550R2F		SAMHWA	2	B2, B4
4004-A		RTS3550S(R1)		NAMYANG		
4005	BEAD CORE	F-FB35T	3.5*6*1	NAMYANG	1	B3
4006	OUTPUT HAR-	IFPS HARNESS	6PIN 320mm	SHIN GIN	1	CON1
	NESS			SEOIL		
4007		IFPS G/W-1	150mm GREEN	SHIN GIN	1	LUG2
	GND WITE ASS'Y			SEOIL		
4008		IFPS G/W-2	215mm GREEN/YELLOW	SHIN GIN	1	LUG3
	GND WIRE ASS'Y			SEOIL		
4009		BCP-03A		BAE EUN	1	INLET
4009-A	INLET	0714-FR7		INALWAYS		
4010		US35060	UU1116 0.35*60T	BUJEON	2	LF1, 2
4010-A	LINE FILTER			YOUNHWA		
4011		BAR5*20(15.5TS)	5.5uH	NAMYANG	1	L1
4011-A	CHOKE-COIL			DONGHEUNG		
4012		IFPS-V2	IPT-2	DONGHEUNG	1	PT1
4012-A	TRANSFORMER			SUNGWON		
4012-B				ASEA		
4013		FC51F		TRLAD	2	FOR F1
	CLIP FUSE					
4014		50T 020H	250V 2.0A	TRIAD	1	F1
	FUSE-GLASS					
4015		IFPS	SECC T=1.0	SUN WOO	1	
4015-1	SHIELD PLATE			YOO CHANG		

No.	ITEM	PART No.	DESCRIPTION	VENDOR	Q'TY	LOCATION
4016	PCB	IFPS-V2	FR-1 1.6T	CHUNG JU	1	
4016-A				GANA		
4017	LABEL	IFPS-V2		SAMSUNG PRINTEC	1	
4018	SCREW-FG	MSBH 4*6	SCREW+WASHER	DAEKYUNG	1	
4019	SCREW	MSBH 3*6	TAPTITE GLD	DAEKYUNG	4	
4020	SCREW	MSBH 3*10	GLD	DAEKYUNG	2	J1~J4, J6~J9
4021	WIRE JUMPER	0.6mm		SAMEUN	8	Q1, 2
4022	SILICON RUBBER	TUBE 9.5*27	0.45T	MUNG SUNG	2	
4022-A		CAP TO-220	0.45T	APEX		
4023	CLAMP-TR4	SPCC 1.6T		DONG IL	2	
4023-A				YOO CHANG		
4023-B	CLAMP-TR		IFPS	YOO CHANG		
4024	SOLDER WIRE	SN63% 1.0		SEOUL		
4025	SOLDER BAR	SN60%		SEOUL		
4026	AUTO(POST)FLUX	JS-90TVS		SANKEI KOREA		
4027	THINNER	4662SM		KESTER		
4028	LUG GROUND	4Ø 0.5T		DONG IL	1	LUG1
4029	LUG GROUND	3Ø 0.5T		DONG IL	2	LUG2, LUG3

10. Block Diagram



11. Wiring Diagram